SEPTEMBER 14, 1953

NEWS ISSUE

Electrical World

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In class

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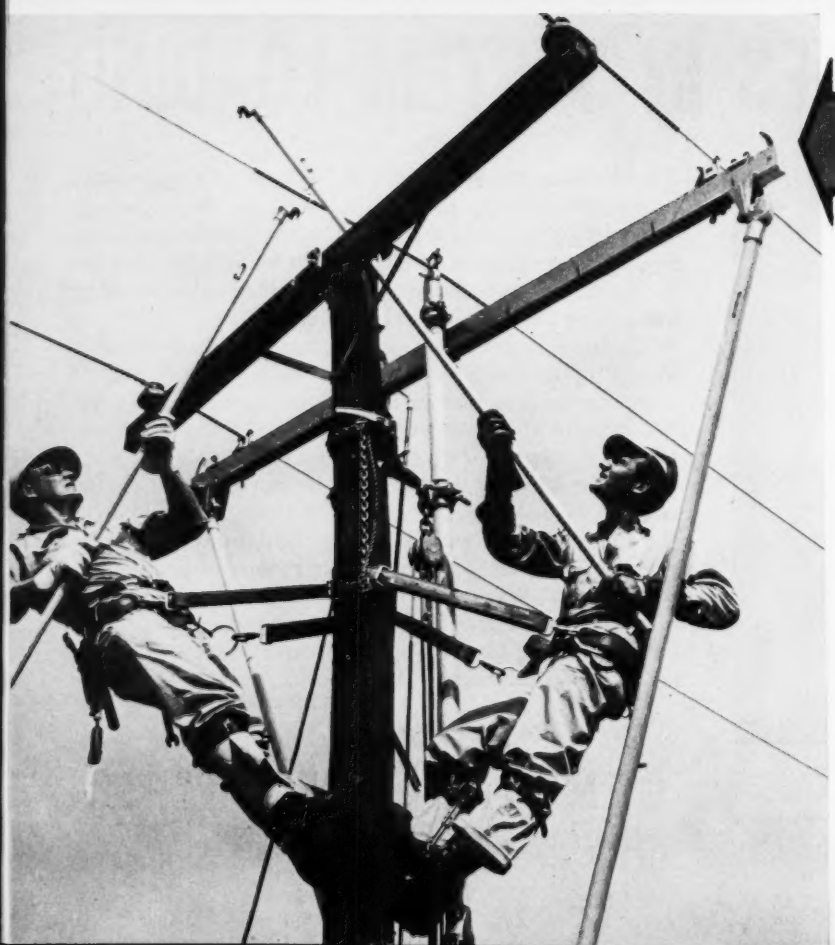
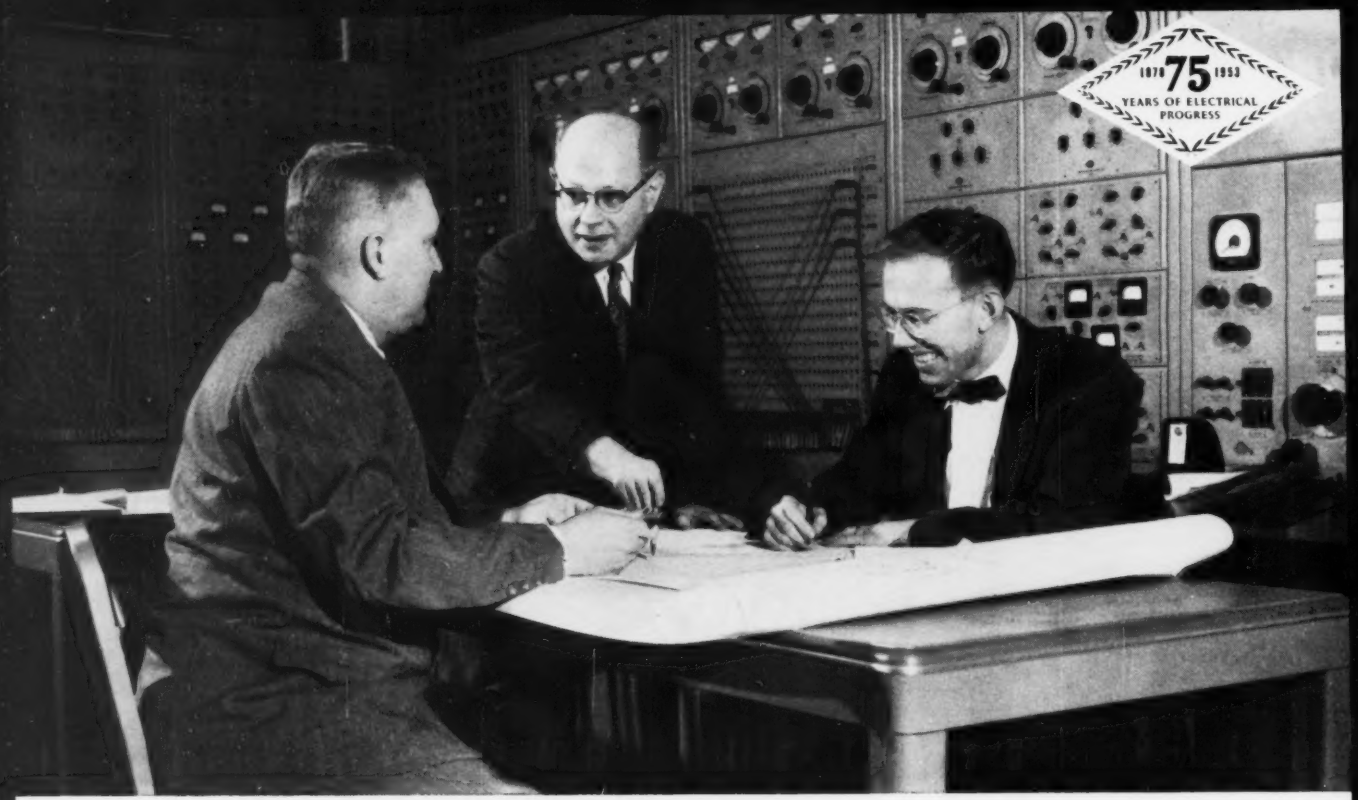


in the field,

Indiana & Michigan linemen are . . .

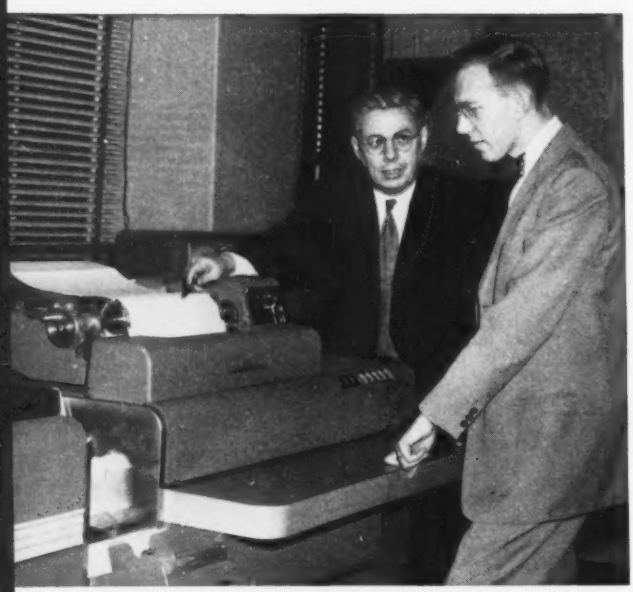
Learning New Tricks With Hot Sticks

See page 16



Basic tool for all transmission studies, the network analyzer, provides necessary circuit loading information to be used in digital calculations. S. B. Crary, Manager, Analytical Engineering, checks results with G. Kron and Dr. L. K. Kirchmayer, developers of the new loss formulas.

Transmission loss studies can mean NEW ECONOMIES IN SYSTEM LOADING



Electronic computers solve and print the answers to loss calculations for F. J. Maginniss, Manager, Special Investigations Section, and Dr. L. K. Kirchmayer, thus eliminating much repetitive human effort.

Transmission losses can now be quickly and economically analyzed by the use of new loss formulas developed cooperatively by General Electric and electric utility engineers. Applied to your system, these formulas bring improvements in generation scheduling, interconnected system energy accounting and future system planning.

Worthwhile savings result from economic loading in system operation. By following the recommendations of transmission loss studies, load dispatchers and designers can achieve the most economic system loading. These studies involve a new concept in network mathematics, using the network analyzer, tensor analysis, and digital computer calculations.

General Electric engineers are constantly making developments on all phases of power systems engineering—from product advances to over-all system economy studies. More detailed information is available by writing for "Loss Formulas Made Easy." Write to Section 301-228, General Electric Co., Schenectady, New York.

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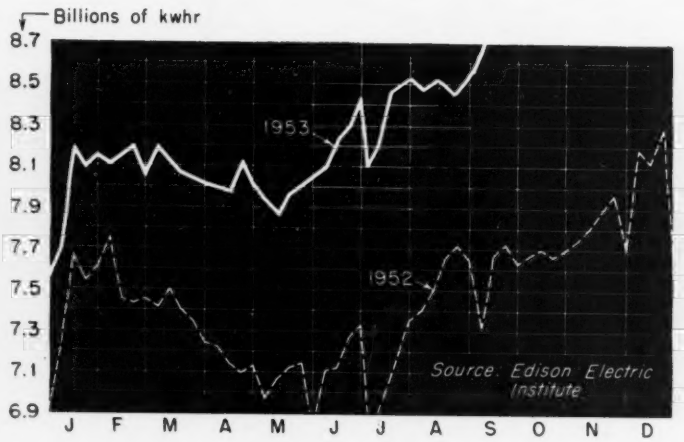
GENERAL ELECTRIC

VOLUME 140, NO. 11

September 14, 1953

Electrical World



Output Week Ended Sept. 5—8,694,301,000 Kwhr

Per Cent Change From Previous Year

	Total US	New Eng.	Mid. Atlan.	Cent. Ind.	West Cent.	South-east	South Cent.	Rocky Mount.	Pacific NW	Pacific SW
Sept. 5	+18.7	+20.9	+18.9	+19.0	+20.4	+28.9	+9.7	+12.2	+12.4	+10.8
Aug. 29	+11.7	+10.8	+10.1	+11.8	+10.4	+25.4	−1.6	+8.6	+5.7	+7.1
Aug. 22	+9.2	+9.4	+5.8	+8.6	+5.4	+20.2	−0.8	+9.5	+5.1	+8.2

Electric Power Statistics

		Latest Month	Preceding Month	Year Ago
Peak Load (Million Kw)	May	73.5	72.9	65.9
Capacity (Million Kw)	June	85.06	84.34	77.46
Production (Billion Kwhr)	June	36.83	35.98	31.53
Hydro	June	9.10	10.29	9.16
Fuel	June	27.73	25.69	22.37
Fuel Consumption				
Coal (Million Tons)	June	9.06	8.59	7.66
Oil (Million Barrels)	June	6.12	6.09	3.91
Gas (Billion Cu Ft)	June	103.73	87.85	89.29
Sales (Billion Kwhr)	June	31.77	31.32	27.67
Residential	June	8.37	8.50	7.44
Commercial	June	5.46	5.18	5.00
Industrial	June	15.80	15.49	13.20
Other	June	2.14	2.16	2.03
Net Income Class A & B Companies ($ Million)	June	77.81	82.13	71.03
Estimated Dec. '53 Peak (Million Kw)	June	86.2	86.1	88.3
Kwhr per Residential Customer (12 Month Average)	May	2,241	2,224	2,079
Revenue per Kwhr Residential Service (12 Month Average)	May	2.76¢	2.76¢	2.78¢
Canadian Production (Billion Kwhr)	June	5.26	5.76	4.99

Business Statistics

FRB Industrial Production Index†††	July	235*	241**	194
Gross National Product Annual Rate ($ Billion)	2nd Qtr.	372.4	362.0	345.1
EW 5 Industry Production Index	July	130.6	130.9	95.6
ENR Construction Cost Index††	Aug.	128.3	126.6	122.7
BLS Consumer's Price Index	July	114.7	114.5	114.1
NEMA Insulation Materials Sales Index†	June	174.4	173.9	137.7
NEMA Electric Appliance Sales Index†	June	105.2	107.9	113.6
NEMA Household Refrig. Sales Index†	June	88.3	80.5	97.5

*Preliminary **Revised †1947-49=100 ††1949=100 †††Unadjusted

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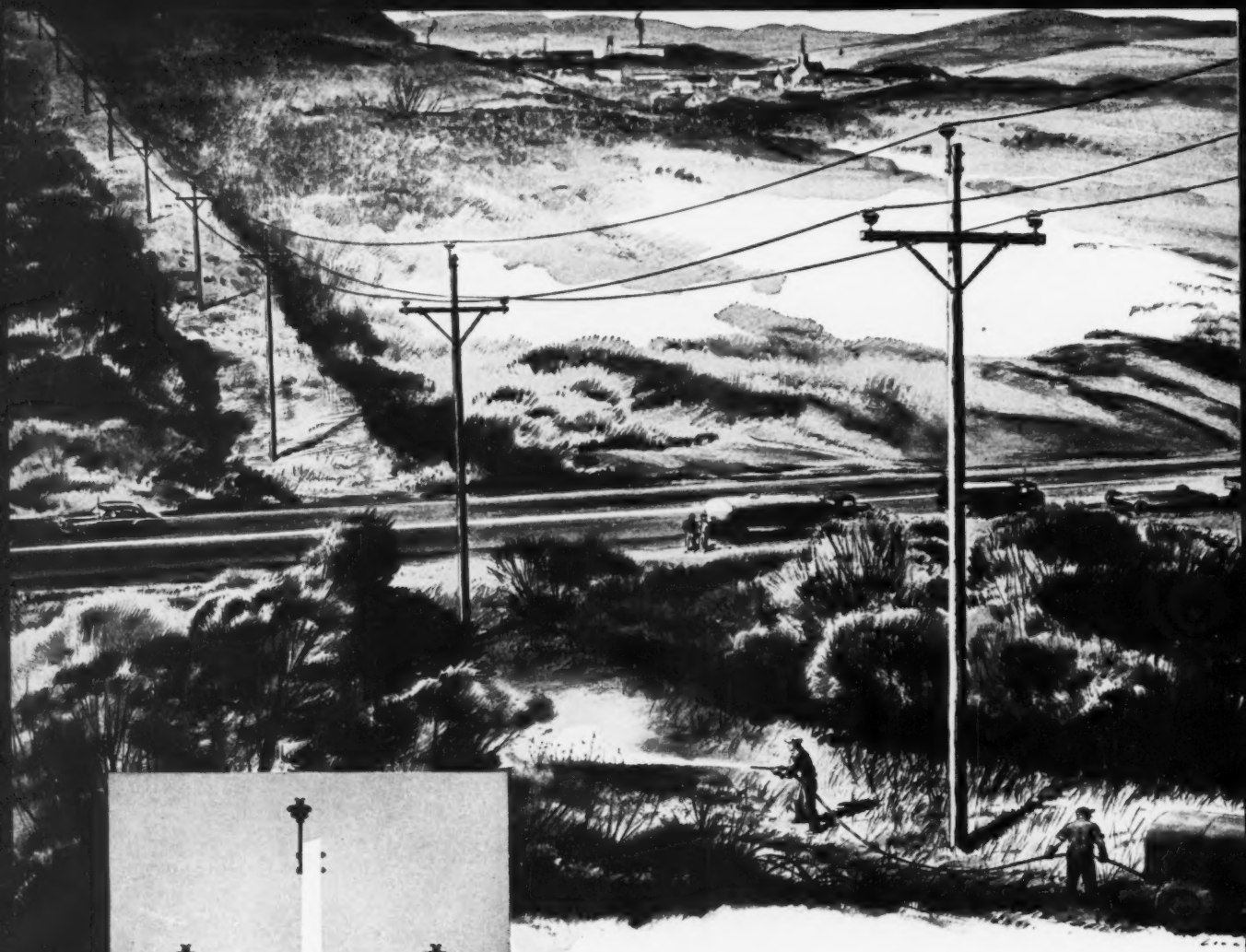

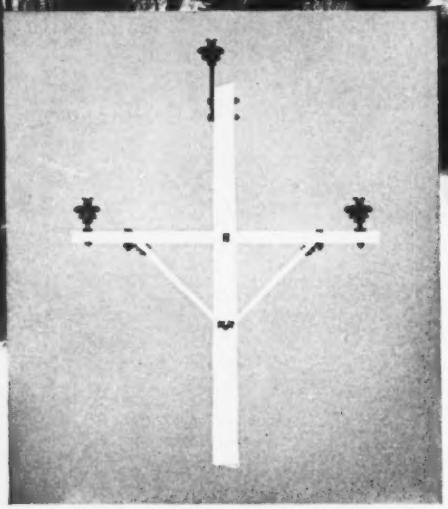

Type 401
Triangular structure*

Quantity	Description
1	Crossarm
1 pr	Wood crossarm brace
2	Washerhead bolt ½" w/sq. nut and flanged 3" x 3/16" washer
3	Pin type insulator
1	Curved shouldereye bolt ⅝" w/washer
2	Crossarm pin long shank
3	Machine bolt ⅝" w/locknut
2	Curved washer 2¼" sq.
1	Washer 2¼" sq. x 3/16", 13/16" hole
1	Spring washer ⅝"

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THE ELECTRICAL WEEK

The Issue's News Highlights—Extra-high voltage transmission systems was among the major topics discussed at AIEE's Pacific General Meeting . . . Revised 20-year contract BPA is offering private utilities in the Northwest aims at equitable allocation of power, BPA Administrator Raver declares.

Representative Dondero sends out letters to editors and co-op and municipal executives explaining proposed amendment to TVA Act abrogating "sole supplier" clause.

Office of Defense Mobilization has denied Portland GE a third extension of its rapid tax amortization certificate for the proposed Pelton Dam.

North Carolina State College at Raleigh and AEC sign a pact whereby AEC will lend the college enough fissionable Uranium 235 to fuel the college's "Raleigh Research Center," recently constructed in a new building on the campus.

National Safety Council has incorporated under a federal charter. Pres Ned H. Dearborn says the charter means little change in the structure, purposes, and activity of the council. It will continue to be a privately operated and financed membership association.

Imperial Irrigation District, El Centro, Calif., directors approve proposed $10-million 33,000-kw hydro project at Pilot Knob on American Canal. Bond election to finance the entire amount will be called in November.

Off the New England Wire—Public Service of New Hampshire asks PSC approval to increase rates 6%, over $1 million gross or about $500,000 net after federal income taxes . . . Connecticut Power will build a 115-kv line from Berlin to Newington, one from Berlin to New Britain, and one from Berlin to Middletown, site of Hartford Electric Light's new steam plant. A new tie with Connecticut L&P at Berlin also is involved.

Recent prolonged heat wave in Cleveland shot temperatures to 100 degrees and caused an unusual Cleveland Electric outage. Lead insulation burst on one of three underground cables leading to a substation, due to excessive heat. Humidity in the air condensed, causing a short circuit in the cable. Soon after power was shunted to two remaining cables, same thing happened to one of them. To distribute load, CEI had to cut off groups of 200-300 users temporarily while repairs were made. Some 10,000 customers were affected. Service was restored quickly. CEI says it doesn't remember when such a thing happened before.

Mississippi P&L adds its 150,000th customer . . . Arkansas P&L has been trying to lease the West Memphis municipal electric plant for more than a year, Mayor W. B. Fordyce has just revealed . . . Six REA co-ops are planning to buy the facilities of General Minnesota Utilities Co for a reported $700,000 . . . Central Louisiana Electric places in operation initial unit of 25,000 kw at its plant located on Charenton Canal, near Baldwin.

Clyde T. Ellis, executive manager of NRECA, told a regional meeting of that organization in Michigan last week that "It seems apparent that the heretofore dynamic federal program of developing the country's rich hydro electric resources and selling that power in such a way that the people get the benefits is going down the drain." In referring to the recently announced Interior Department's federal power program he said "These policies are not in accord with your policies and you ought to fight against them or reconsider your present policies and put new ones into action."

Off the Washington Wire—REA grants Death Valley Electric Cooperative a loan of $2,035,000 to construct 179 miles of distribution lines and 116 miles of 69-kv transmission lines in the Mojave and Death Valley deserts . . . President Eisenhower signs executive order transferring to FPC the actual issuance of permits for construction, operation, and connection of border facilities for transmission of electric energy from U. S. to a foreign country.

Answering APPA's demand for a Congressional investigation of ODM certificate granting a tax writeoff to Vepco EW, Sept. 7, p 71), Pres J. G. Holtzclaw says "Over the normal life of the facility the depreciation deducted for tax purposes is exactly the same as if there had been no accelerated amortization . . . Charges to depreciation are deductible against federal taxes for first five years and a larger amount in remaining years. That's all there is to it."

Joplin, Mo., City Council authorizes negotiation of contract between city and Empire District Electric which will result ultimately in installation of a $130,000 street lighting system for city's main business district.

Delivery energy for Dalles Dam may be delayed one year until November 1958 under Army Corps of Engineers civil works cutbacks to comply with Presidential directives slashing fiscal expenditures. The dam will bear the brunt of Pacific Northwest slash.

Georgia Power and IBEW-AFL agree to 5½% wage increase . . . NLRB orders West Texas Utilities to bargain with IBEW-AFL as the exclusive representative of its power plant employees, including those who operate and maintain diesel engines . . . Seattle's 1954 budget, as approved by City Council, include a wage increase for City Light lineman from $2.54½ to $2.65 an hour, with same percentage hike for all other electrical workers in the department.

Congratulations—Cecil Smith, vice president in charge of operations for Montana-Dakota Utilities, Minneapolis, becomes new president of utility to succeed R. M. Heskett, newly elected board chairman and chief executive officer . . . Georgia Power elects J. F. Pennington vice president in charge of operations and C. M. Wallace, Jr. vice president in charge of sales . . . A. E. (Doc) Holloway, a director of San Diego G&E, gets an honorary degree of doctor of engineering from Purdue University.

(Continued on page 10)

INFORMAL DISCUSSIONS were held before and during AIEE Pacific General Meeting. At convention eve gathering (left panel) are J. H. Steede, British Columbia Electric; R. C. Setterstrom, Montana Power; and J. A. McDonald, GE. At right, Irvin Best, Allis-Chalmers, G. B. Scheer, Kaiser Aluminum & Chemical; and D. I. Cone, Pacific T&T, talk over topics brought up after the convention got under way

AIEE Discusses High-Voltage Lines

Pacific General Meeting also hears reports on testing of rotating machines, capacitors for transmission systems

Current interest in extra-high voltage transmission systems, high-voltage dc testing of rotating machines, and capacitors for high voltage transmission lines was reflected in papers and discussions at the American Institute of Electrical Engineers' Pacific General meeting. About 500 engineers from western United States and Canada attended the sessions at Vancouver, B. C., Sept. 1-4.

Report on Swedish System . . . One-year's experience with Sweden's 400-kv transmission system was discussed in a paper by B. G. Rathsman and G. Jancke, Swedish State Power Board, Stockholm. Line insulation levels, determined by internal overvoltages, can be reduced from 1,600 to 1,500 kv, they said. Insulation levels for station equipment scheduled for service in 1954 and later will be lowered from 1,775 to 1,500 kv. This reduction is allowed through increase in short-circuit power in the new stations.

Series capacitors in the 300-400-mile single circuit lines have raised transmission capacity by 250,000 kw to 650,000 kw. Future increase to 800,000 kw is planned. Transmission costs at 400 kv without series capacitors are about 65% and with them about 55% of those of a corresponding 230-kv system without capacitors.

Comments on use of bundle-conductor, single-circuit lines at extra-high voltages, as compared with double-circuit, single conductor lines, were offered by H. P. St. Clair, American Gas & Electric Service Corp, New York. Double-circuit construction (AG&E's 330-kv system) offers more flexibility in switching for operational benefits and sleet melting and greater transmission capacity, St. Clair said. To offset this, however, he noted that line reactance is somewhat greater and a higher tower is necessary.

High-Voltage Testing . . . High-voltage dc testing of stator windings on large synchronous condensers was reported by C. L. Sidway and B. R. Loxley, Southern California Edison Co, Los Angeles. Using a two-unit, portable 15/45-kv test set, they listed conclusions which included:

1. Stable power supply for dc test set is essential, with voltage regulation within ± 0.10 recommended.

2. Extrapolating test curves to predict failures is not always possible, and usually indicates optimistic values. Best predictions are obtained by taking a large number of points, with smaller voltage increments as point of failure is approached.

3. Tests indicate that dc to ac ratio of 1.8 generally will be as searching as standard 1-min. ac test. Dc test is more searching in disclosing insulation defects in winding external to core iron.

4. Dc testing has permitted selective coil replacement in place of more expensive rewinding of two machines.

Participants in the discussion agreed that more dc testing should be carried on and results reported. G. L. Moses and A. A. Johnson, Westinghouse Electric Corp, recommended a dc to ac ratio of 1.6 as minimum. They suggested that operators report all rotating machine winding failures with their conclusions as to the causes.

Testing with dc voltage at 2.5 or more times standard 150% ac test value may damage windings before signs of failure appear, warned C. E. Kilburn, General Electric Co. Although dc and ac tests are not com-

parable, remarked Kilburn, dc tests may disclose creepage failures and ac tests incipient puncture failures. His associate, R. W. Wiseman, cautioned that dc testing may be more harmful than ac to some windings that have picked up foreign materials. In testing the second phase of the winding, he pointed out, the unintentional reversal of polarities may result in near double actual dc voltage between the two phases.

Use of series and shunt capacitors in high-voltage transmission systems was discussed in three papers. S. B. Crary and L. E. Saline, General Electric, concluded in their paper that most economical and practical location of series capacitors is in intermediate switching stations. They further reported that while switching out a portion of this kvar capacity in a 300-mile transmission line does not appear practical, this practice does show economic advantages in 600-mile lines to offset greater complexity and decreased flexibility involved.

Parallel Capacitor Banks . . . E. C. Starr, Oregon State College, Corvallis, mentioned a scheme using parallel banks of capacitors, as opposed to the back-to-back scheme suggested by Crary and Saline, would allow up to 30% savings in cost due to need for breakers of lower ratings. Parallel banks also would eliminate restrikes possible in the back-to-back scheme, he said.

In their paper, Starr concluded with E. J. Harrington, Bonneville Power Administration, that large banks of switched shunt capacitors at the load end are most economical means of providing reactive to obtain a flat operating voltage level throughout a heavily loaded transmission circuit.

Modifications in circuit breaker design to eliminate or reduce to a minimum restrikes in units controlling large shunt capacitor banks were described by Westinghouse engineers W. N. Leeds and C. F. Cromer, and J. H. Pehrson. Significant additions were an air chamber to act as a shock absorber and low ohmic resistors in parallel with interruptor assemblies. Satisfactory operation of modified breakers even under most severe operating conditions was noted.

Split-Phase Currents . . . Considerable interest was shown in use of split-phase currents as a source of generator protection. As reported by H. R. Sills and J. L. McKeever, Canadian General Electric Co, split-phase and differential voltage with suitable relaying provide protection against all internal faults and some protection against armature open circuits. While the combination affords a far more comprehensive protection than any other means, differential voltage circuit may be inoperative in the unlikely event of a fault being balanced across the mid-winding tap.

Careful design and installation of balanced protective equipment should eliminate about half of all incorrect pilot wire relay operations, reported M. A. Bostwick, Portland General Electric Co. He presented conclusions aimed at insuring correct operation during transmission line faults. Discussion from the floor indicated a renewed interest in obtaining dependable pilot wire relay operation in the field.

Superiority of heavy tin and fortified cadmium platings on fittings for aluminum-to-aluminum and copper-to-aluminum connections was indicated in the paper by D. C. Hubbard, R. W. Kunkle, and A. B. Chance, A. B. Chance Co. Report covered four years of their own and parallel laboratory and field testing of 240 connectors in which corrosion resistance and electrical and mechanical performance were considered.

TRIO of conference participants discuss a paper presented at meeting. They are (l to r) W. H. Blankmeyer, Montana Power; L. A. Carter, Pacific P&L; and J. V. Kressner, Westinghouse

FPC Rejects Petitions on St. Lawrence License

The Federal Power Commission last week rejected a series of petitions that would have blocked construction of New York State Power Authority's St. Lawrence River hydroelectric project near Massena, N. Y.

FPC had issued a license to the New York authority on July 15, covering construction and operation of the project in the International Rapids section of the St. Lawrence.

Three of the petitions rejected asked FPC to reconsider its opinion granting the license. They were filed by the Central Pennsylvania Coal Producers' Association, National St. Lawrence Project Conference, and Lake Ontario Land Owners and Beach Protective Association.

The fourth petition, filed by Public Power & Water Corp of Trenton, sought review of FPC's order denying that a company license for a hydro project in the same section of the river.

All four petitions were turned down on the grounds that no new facts or legal principles were raised and that no evidence was offered showing why a stay of the New York authority license was desirable.

Equitable Power Allocation . . .

. . . is the aim of the revised draft of 20-year contract BPA is offering private utilities, Raver declares

The revised 20-year contract giving private utilities the right to 1.5 million kw of Columbia River federal hydroelectric energy was described by Dr Paul J. Raver, Bonneville Power Administration administrator, as an "effort to allocate on an equitable basis" the federal hydro power to be available with completion of new projects (EW, Sept. 7, p 75).

Terms of the contract were interpreted by some non-partisan observers as fitting the new Eisenhower power policy like the mate of a custom-made glove.

Dr Raver, however, has emphasized the agreement has not been signed by Secretary of Interior Douglas McKay, or by Portland General Electric Co, which has spearheaded the burden of negotiations for the investor-owned utilities since early in the year.

Hold Statute Priority . . . Broadly evaluated, the contract leaves the PUD's, co-ops, and municipal systems holding statute priority untouched except where load growth for industries they serve is limited until allocations to private utilities equal the direct BPA industry customer commitments. Raver pointed out the terms call for private utilities having first claim on the next 500,000 kw of new generation, BPA customer industries to get the next 70,000 kw to firm up existing loads as called for under demand contracts, and the private utilities will then have first call on the next block of 1 million kw of firm energy.

Bonneville's direct industry customers now take 1,052,460 kw. Except for the 70,000 kw allocation, the 12 industries must wait for private utilities to catch up before they can obtain a share of any remaining federal generation available.

Realities of the Columbia River basin federal power pool future supply indicate the private utilities will be lucky if their maximum take is 750,000 kw. The first energy can be expected by these utilities in 1958. The peak amount available after service to protected preference agencies may be in 1960. On the basis of anticipated load growths among preference agencies, Raver reports, the private utilities and BPA industry customers will be down to zero by 1966 unless new generation facilities are begun in the Pacific Northwest. Carrying this further, Raver reports public agencies by 1973, when the new private utility contract is scheduled to expire, will be taking the full 3,550,000 kw of federal generation now in sight and may still be short 450,000 kw.

In this connection, Raver pointed out that by 1973 the region will require 500,000 kw of new generation capability over and above facilities now under construction. This is without any industrial expansion among the present big power consuming plants.

Aim to Mollify Objections . . . Changes from the previous draft aim at mollifying objections from public agencies and, in part, those of the industries. To the extent that it matches policies laid out in Undersecretary of the Interior Ralph A. Tudor's announcement, it is changed substantially in the assurances to stand by the rights of the preference customers under the Bonneville and other laws.

Under the earlier draft clause dealing with industries, BPA would have been able to extend contracts only if combined with a "steam cost sharing" provision. This has been eliminated.

The original draft would have given the private utilities priority over new industrial needs to the extent of the utilities' full requirements. In the revised draft, it is clearly stated that —after service to public agencies, the industries to the extent of their contract demands and the private utilities

Lighting Contest Winners Announced

Winners in the first nationwide Lighting Competition for Electrical Contractors, sponsored by Electrical Construction and Maintenance magazine, were announced last month. Eighteen cash awards, totaling $1,050, and 13 honorable mentions were awarded to contractors in 11 states. In the photo contest judges study one of the entries. They are, seated from left: Everett M. Strong, Cornell University; Carl W. Zerson, Chicago Lighting Institute, chairman of judges; Willard W. Thompson, Thompson Engineering Co, Boston; and, standing, Richard Kelly, lighting consultant, New York City, and Joseph S. Schuchert, Duquesne Light Co, Pittsburgh.

to the extent of allocations under the new agreement—it is the intention of the administrator to "allocate equitably between industries and the private utilities" amounts of remaining power.

Major complaint of public agencies against the original draft was a clause whereby they would not have been able to include in their schedule of requirements any new industrial loads of 10,000 kw or more.

A completely new provision places a parallel limitation on new industry loads requiring 10,000 kw or more to be served by the utilities. As in the instance of the preferred agencies, this limitation does not apply if the private utilities acquire equivalent generation.

Restriction on both in respect to these industrial loads apply only until supplies of federal hydroelectric energy are adequate to permit development of such industrial loads.

The revised draft also provides that the amount of fuel generated energy to be utilized by the utilities in normal peaking operations, as specified in the contract, will be increased if California Oregon Power Co, Idaho Power Co, or Montana Power Co take power under the contract.

A completely new provision has been added which stipulates that the contract shall not limit the government's right to sell on a firm basis any power made available to the private utilities which they do not agree to purchase.

May Share Steam Costs . . . One clause of significance to the region's private utilities suggests the possibility of BPA absorbing a share of the "excess steam costs" required in any period of hydro shortage such as forced private companies last winter to surcharge customers in excess of $10 million. Presumably, this clause is incorporated to prepare for any Congressional sanction for such absorption by the federal power transmission agency.

Raver reported Interior contemplates contracts with Pacific Power & Light Co, Mountain States Power Co, Puget Sound Power & Light Co, Washington Water Power Co in addition to Portland General Electric Co. If they wish, others that could be included are California-Oregon Power Co, California-Pacific Utilities Co, Idaho Power Co, and Montana Power Co.

Jackrabbit's Outage

The Nebraskan town of Osmond can start boasting about having the jumpingest jackrabbits anywhere. It seems that a local REA line crew went out recently to track down a short circuit that knocked out power to six farms and discovered the cause of the trouble was atop a 35-ft pole. It was a full-grown jackrabbit whose body had shorted the wires.

Dondero Hits TVA

Congressman scores 'sole supplier' clause, resale rates in letter to co-op heads

George A. Dondero, (R., Mich.), chairman of the House Public Works Committee, has explained his proposed amendment to the TVA Act of 1933 in a letter dated Sept. 12 addressed to 2,000 editors and executives of municipalities and co-operatives, which are preferred customers of Tennessee Valley Authority.

Dondero's amendment to Section 10 of the TVA Act calls for abrogation of the "sole supplier" clause in TVA's contracts with municipalities and co-ops under which TVA's preferred customers are prohibited to obtain additional sources of power. The amendment, introduced in the closing days of the first session of the 83rd Congress, would also abrogate TVA's control over local resale rates.

In the letter the Michigan representative stated:

"It is becoming clear that the cheap rates of the TVA, once considered a boon, may soon become an economic blight. The very cheapness of that power, due to tax and interest avoidance, seems to have led to increasing obdurance by federal legislators representing non-beneficiary areas to pleas for additional funds for further "free ride" generating capacity in your area. . ."

"Thus you are faced with possible poverty of power capacity while enjoying extraordinarily low rates. . ."

Power Shortage . . . ". . . It has been said, with some justification, that the shortage of power in the TVA area has been created by its own board through injudicious, over-optimistic and, perchance, intentional over-selling of its firm and secondary power supply."

"The obvious recourse for TVA preference customers . . . should be the construction . . . of additional power generating facilities of their own, and/or of the purchase of power from adjacent private generating sources."

"TVA's customers, however, are foreclosed from such relief by administrative action of the board . . . Under this authority the so-called 'sole supplier' clause has become standard in its contracts with its preference customers."

"It is my proposal that the communities served by TVA shall be relieved from the shameful bondage of the sole supplier clause and resale rates control and that they be returned to their pristine sovereignty in domestic affairs."

FPC Schedules Hearing on Power Diversion Plan

The complicated hassle over Pennsylvania Water & Power Co's plan to divert some hydroelectric power now distributed in Maryland for use elsewhere is headed for a full-scale hearing in Washington next month. Federal Power Commission has scheduled an official airing for Oct. 19 on complaints filed by Maryland Public Service Commission and Consolidated Gas, Electric Light & Power Co of Baltimore.

At issue is a shift planned by Penn Water, which would take out of Maryland part of the output of two licensed hydro plants on the Susquehanna River—at Holtwood and Safe Harbor—jointly owned by Penn Water and Safe Harbor Water Power Corp. Under FPC rate schedules, these plants were pooled with Penn Water's Holtwood steam plant and the power sources of Consolidated Gas Electric Light & Power to the south, and with Pennsylvania Power & Light Co, Metropolitan Edison Co, and Philadelphia Electric Co sources to the north.

The Maryland PSC wants FPC to direct continuance of these operations. Consolidated's complaint charges conditions have changed since FPC fixed rates in 1949 for Penn Water and that other utility customers of Penn Water now get rate advantages.

THE ELECTRICAL WEEK

CONTINUED

Vepco plans to make $16-million, 100,000-kw addition to its Possum Point steam plant near Quantico. . . Pacific P&L puts into service the No. 1 generator of 54,000 kw rated capacity at its Yale hydro project. Unit went on the line about a year behind the original schedule because of minute cracking discovered in concrete penstock tunnels after initial test runs.

Three arbiters of Montaup Electric dispute award UWUA-CIO workers a 6% wage hike which the company had offered as compared to 20% requested by the union. Seven of nine points in dispute were won by the company.

First unit at Philpott hydro dam begins spinning. The government will sell the power to private utility firms.

Seven members of House Public Works Committee visit site of proposed St. Lawrence seaway project. "This is farewell visit," Rep George A. Donderon, R., Mich., said at a luncheon. "We either go in with Canada and build this project together or Canada will do it all alone."

Mid-Century Conference on Resources of the Future will be held in Washington on Dec. 2-4, Dr R. G. Gustavson said recently.

At the National Industrial Conference Board meeting on Oct 29-30 at Waldorf-Astoria Hotel, New York the Brookhaven reactor, atomic submarine reactor by GE, commercial atomic power plant by North American Aviation and one by the Westinghouse will be displayed.

IN THE INDUSTRY

Harry is back in action, Harry S. Truman, that is. The former President of the United States took to the stump on Labor Day to address a rally of Michigan unions of the American Federation of Labor and the Congress of Industrial Organizations at Detroit. Harry was in his best "give 'em hell" form. So he couldn't miss this great opportunity to take a sock at the "power trust." This is what he had to say:

"Then look at what's happening to the policy of developing low-cost electric power. The betrayal of the Hells Canyon project in the Columbia River basin tells the story. This is the greatest natural dam site left in America. For years we have been battling to keep it out of the hands of the power trust. It should be developed with maximum benefit to the public. Now the Secretary of Interior has come along and said he thinks Hells Canyon ought to be turned over to the Idaho Power Co.

"If they give Hells Canyon away, others will follow. The power lobby is doing its best to take over Niagara Falls. And the bell will be tolling for the Tennessee Valley Authority and the rural electrification and all the rest. All this will mean less power and higher rates, fewer jobs and lower wages."

Utilities Not Alone at the Whipping Post . . . This is Truman at his best, the small town politician orating for the "peepul"—a man who knows better delivering a diatribe for the masses who know no better. But the power companies were not alone at the whipping post. Listen to this:

"Look what they have done with your immense offshore oil interests. They have given away billions of your dollars in oil to pay a political debt to the Shivercrats and the Dixiecrats. A right expensive political debt so far as the citizens of 45 of the 48 states are concerned. This, in my opinion, is the biggest steal in the history of this government of ours. It makes Teapot Dome look like petty larceny."

And illogical Harry probably sincerely believes this statement. He bemoans the fact that the citizens of 45 states are being "robbed" by the return to three states of oil lands that have always belonged to these states until Harry occupied the White House. Apparently he sees nothing wrong with the fact that federal power projects have often robbed the citizens of all 48 states.

Federal Power Projects a Bigger Steal . . . He calls the return of the oil lands the "biggest steal in the history of this government." He apparently sees nothing wrong with a far bigger steal—the financing of federal power projects by crushing taxes on all of the people so that a few preferred Americans may have "cheap electricity" at the expense of their fellow men.

One hopes these Michigan labor union leaders know the cost of federal power projects to their members. We also hope they know how the leaders of the International Brotherhood of Electrical Workers and the Utility Workers Union of America feel about the deal they get from federal power agencies.

And if the Michigan labor leaders who loudly cheered Harry don't know, certainly somebody in the electric industry should tell them.

TECHNICAL NOTES

ARCHER E. KNOWLTON

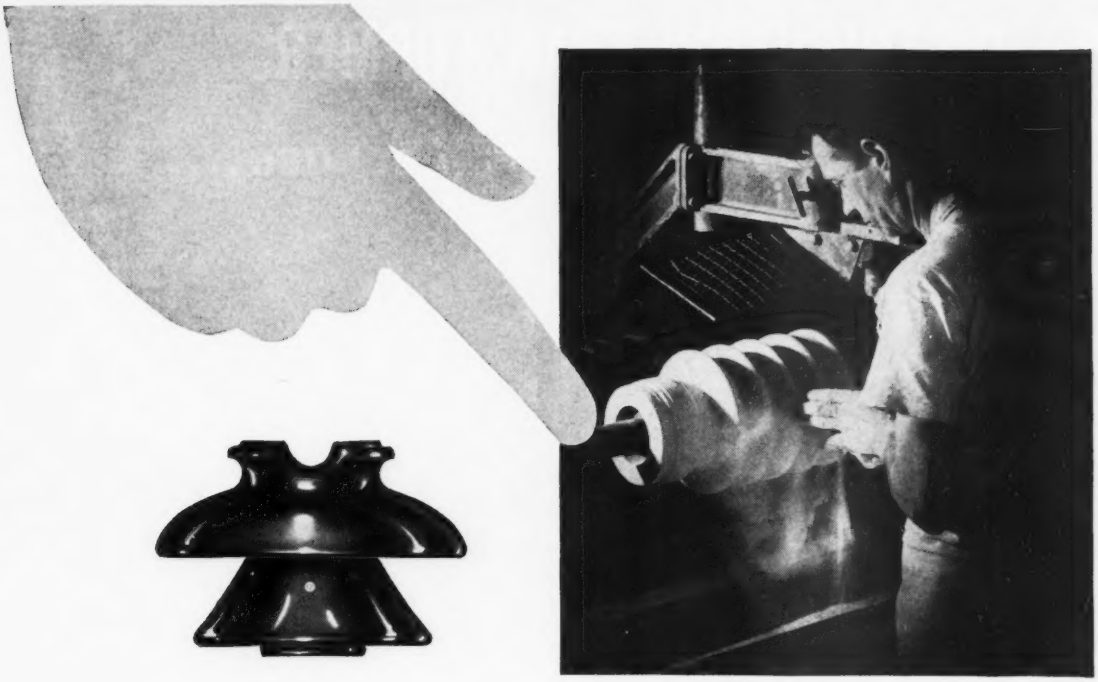
House generators and separate turbine-generators for power plant auxiliary supply for prospective large units may be less favored than transformers connected directly to generator leads. The crux will be maintenance of voltage during start-up.

Contact pressures for aluminum must be limited to about 1500 psi to maintain an assembly without creep and loss of pressure. At such low contact pressure, contact resistance is noticeably reduced by the use of suitable corrosion inhibitors.

Capacitance measurement with an indicating instrument is a quick and simple way to check var output of a capacitor.

Unbalanced voltages on polyphase induction motors create negative sequence voltages which produce airgap fluxes that in turn cause high currents of the same order of magnitude as plugging does.

Watts loss per unit circuit length of pipe-cable systems is substantially greater than the d.c. I^2R value because of skin effect, proximity effect, shield eddy currents, shield circulating currents and pipe cable losses due to hysteresis and eddy currents.



LET'S POOL INSULATOR EXPERIENCE

We make pintype and post insulators at O-B. We make them both as well as we know how, and improve them whenever our experience shows where improvements can be made. Thus there is no need for us to make comparisons between posts and pintypes, which may be misleading, and we do not recommend one over the other. Over a long, long time in the insulator business, we've learned that the right type on one line may not be the best choice for another. That choice is best made on the basis of user experience. Service records provide a fine guide to the selection of proper insulator types.

So let's pool insulator experience. You pick the right type for your line, and we'll provide the best!

Ohio Brass

MANSFIELD OHIO, U.S.A.

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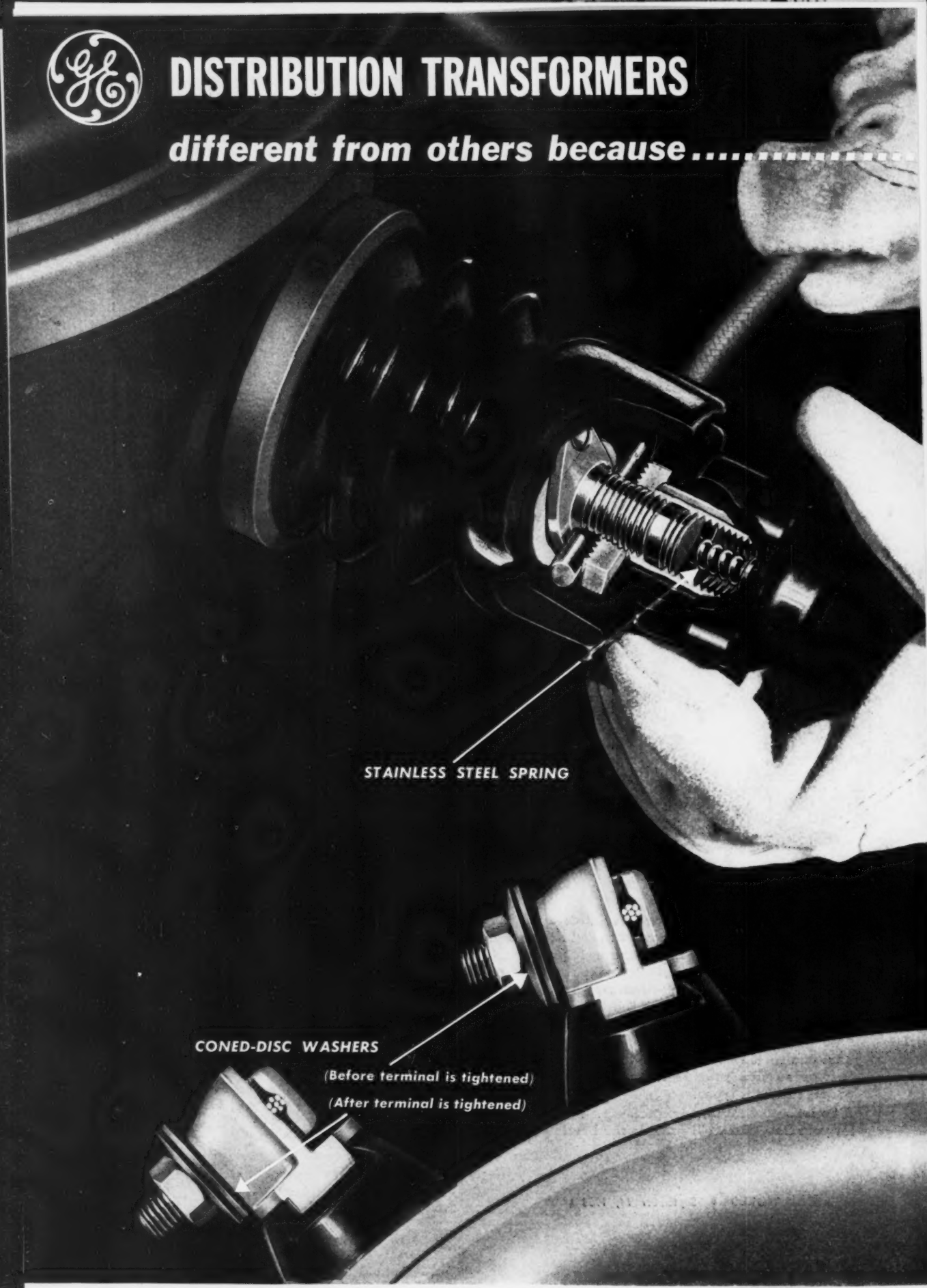
DISTRIBUTION TRANSFORMERS

different from others because.....



....Bushing terminals handle both Cu and Al

retard corrosion... prevent loosening due to "cold-flow" and temperature changes

Whether you use copper or aluminum conductors, General Electric distribution transformers meet your needs—thanks to new terminals which handle both copper and aluminum without special fittings.

HIGH-VOLTAGE BUSHINGS mounted on tank wall have a stainless-steel follow-up spring bearing on an extra-large serrated contact surface, which securely grips the conductor and breaks down aluminum oxide. The spring maintains pressure on the conductor, even when "cold-flow" or temperature changes occur.

LOW-VOLTAGE BUSHINGS and high-voltage cover bushings, which feature Strenicor pressure terminal clamps, have two stainless-steel, coned-disc spring (Belleville) washers. These washers maintain pressure on the conductor in the same manner as the spring in the high-voltage tank-wall bushings.

ALL BUSHING HARDWARE is tin-plated to retard corrosion.

REMEMBER . . . all transformers are not alike . . . compare the General Electric plus features in the chart below and see for yourself.

For more information on distribution transformers, either unit-type or conventional, contact your nearest G-E Sales Office or agent, or write to General Electric Company, Section 431-12, Schenectady 5, New York.

You can put your confidence in—

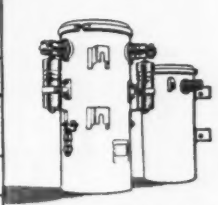
GENERAL ELECTRIC

ALL TRANSFORMERS ARE NOT ALIKE

(make this simple comparison and see)

FEATURE	General Electric	Mfr. A	Mfr. B	Mfr. C	Mfr. D	Mfr. E
Production-line impulse testing	YES	NO	NO	NO	NO	NO
Nitrile rubber gaskets at all tank openings	YES	NO	NO	NO	NO	NO
Strenicor pressure terminal clamps	YES	NO	NO	NO	NO	NO
Insulated clamp-type connectors on tank wall hv bushings	YES	YES	YES	NO	YES	YES
One-piece cover band	YES	NO	NO	NO	NO	YES
Terminals designed for both copper and aluminum conductors	YES	NO	NO	NO	NO	NO
Gapped valve-type arresters	YES	NO	NO	NO	NO	NO
Nationwide company-operated service facilities	YES	YES	NO	NO	NO	YES

1878 75 1953 YEARS OF ELECTRICAL PROGRESS



UNIT-TYPE CONVENTIONAL

"Take your choice G. E. makes both"

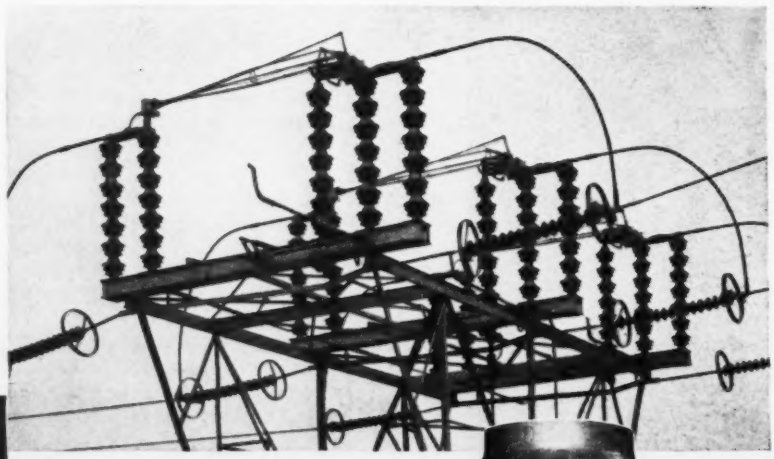
NO. 10 IN A SERIES

A SUB STATION DESIGN ENGINEER ASKS—

"we're interested in higher voltage switch and bus unit operation. Do you have a service record on 220 KV?"

HERE'S OUR ANSWER:

Yes sir! For example, these Pinco 735 units installed at 220 KV by a large eastern utility back in 1929. Operating conditions have been rugged, but these insulators in seven unit stacks have given *twenty-four years of continuous, trouble-free performance* . . . stacks of evidence that Pinco 735's are right *for* the job . . . right *on* the job!



(Right) Rugged porcelain—a balanced design with larger second and center shells—the extra strength and extreme accuracy of assembly . . . all contribute to the trouble-free performance of Pinco 735 switch and bus units.

(Left) Here's a close-up of one of our master jigs in which the 735 unit is assembled. This operation assures exact bolt hole alignment—also cap and pin mounting surfaces are within 3/10,000 of an inch of parallelism.

PINCO INSULATORS

RIGHT ON THE JOB—

See Pages 112 to 123 in Pinco Catalog No. 49 for complete electrical and mechanical specifications covering all Pinco Switch and Bus Insulators. Do you have a copy? If not, write us.

The Porcelain Insulator Corporation
LIMA, NEW YORK

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Federal Agencies Streamlined

Administration's power groups to handle lessened work loads at lower cost or enlarged ones with fewer people

Federal power agencies are regrouping and scaling down to Eisenhower dimensions.

For most agencies the procedure consists mainly of a weeding out and stripping down to handle a lessening work load at lower cost. In others, the cost saving is to be gained by tightening up the organization to carry an equal or greater load with fewer people. Both processes lead frequently to the wiping out or vacating of some policy posts.

Interior Shakeup Typical . . . Interior Department reorganization offers some prime examples of the agency shakeups under way in Washington. Reclamation takes first place on the Interior list.

In June, Reclamation made an 11% personnel cut that dropped more than 1,500 from the bureau payroll. Next, top Interior officers in cooperation with the new Reclamation commissioner, Wilbur A. Dexheimer, appointed a five-man survey team to study the whole Reclamation machine and submit suggested improvements by Oct. 1. Further consolidation will come after that date, both in the field and in headquarters offices.

Separate from the main remodeling job, Interior officials went ahead quickly with a shakeup of Reclamation policy positions. First they got the Civil Service Commission to approve a reclassifying of the three assistant commissioner posts, putting them into the new Schedule C category (confidential or policy positions). Men in these positions now can be replaced at will.

This month Secretary Douglas McKay announced that Dexheimer had abolished one of the three assistant commissioner posts, vacated another by transferring the incumbent, and retained the third without change (EW, Sept. 7, p. 73).

Survey Teams Favored . . . Survey teams are the favored examination tool of Interior. Like Reclamation, two other Interior agencies are now being examined by teams made up of insiders and outsiders.

A third kind of survey has been under way for two and a half months in the Army Corps of Engineers. Lt Gen Samuel Sturgis, chief of engineers, ordered a staff study by the corps of the entire organization. With military and civil works construction due to taper off, he asked for a report on how the Army Engineers organization could be consolidated in accordance with the decreased work load in prospect during fiscal years 1954, 1955, and 1956.

Field offices undoubtedly will be pulled together and reduced in number as a result of this study.

In places where the prospective work load shows a downward tendency, area offices are likely to be closed and district offices made into area offices.

Engineers on Rise . . . In the Rural Electrification Administration, as in the Reclamation Bureau of Interior, the general shakeup in present policy posts is bringing deserving engineers to the top.

REA Administrator Ancher Nelsen has appointed two engineers acting assistant administrators: J. K. O'Shaughnessy to head the entire telephone program and Roy G. Zook to direct all electric power operations.

161-Kv Line in Iowa Ok'd

Interstate Power Co has been authorized by Iowa Commerce Commission to build a 161-kv line from Decorah to Waterloo via Independence, Iowa. The line will connect the present facilities of Interstate Power and Iowa Public Service Co. It is part of an 161-kv grid planned by the eight major power producers of the state of Iowa.

Finis for Con Edison's Cable Yard

New York City is in the process of tearing down the Cable Yard of Consolidated Edison Co of New York, Inc. The yard, located at 96th St. between First Ave. and East River Drive, will make way for modern overpass to help carry the ever increasing vehicle traffic.

This building, originally used to supply power to trolley cars in the late 1800's, was acquired from the New York Railways Co in 1924 by the New York Edison Co, a predecessor of Con Edison. The yellow brick, block-square structure was never used as a powerhouse by Con Edison. Instead, the utility used it as a transformer shop, and for salvage operations and cable storage. In 1946 the city took title by condemnation. However, Con Edison leased the building until the lease expired in March of this year.

Indiana & Michigan has switched to 12 kv. So Paul Bullock and D. P. Dumont set up school to retrain crews to handle new lines live

1 School's sponsors called foremen and supervisors together to explain reasons for program, show how training would be carried out

They're Learning New Tricks With

Rapid cutover of Indiana & Michigan Electric Co's 4 kv distribution to 12 kv, plus the realization that there were variations in hot stick methods in the company's three divisions, recently sparked the idea of an all-company hot stick school.

D. P. Dumont, supervisor of system engineering, and Paul Bullock, superintendent of transmission and distribution of the Marion-Muncie Division, who first thought of the school, called on personnel men from Indiana and Michigan and from American Gas & Electric Service Corp for assistance.

Study Group . . . A committee was formed of the company's division superintendents and the supervisor of system engineering. They discussed various methods used in hot stick work throughout the company and decided on a standard procedure which would be strengthened by "skill points" suggested by the company's "old-timers." The committee also planned and erected school facilities. It establishes policies, follows the training closely and meets occasionally to review progress.

Course Analyzed . . . Planning was the first step in the program. A list was made of 12-kv hot stick operations. Realizing that thorough training could not be given in all operations in a short time, the committee condensed the list to six basic operations.

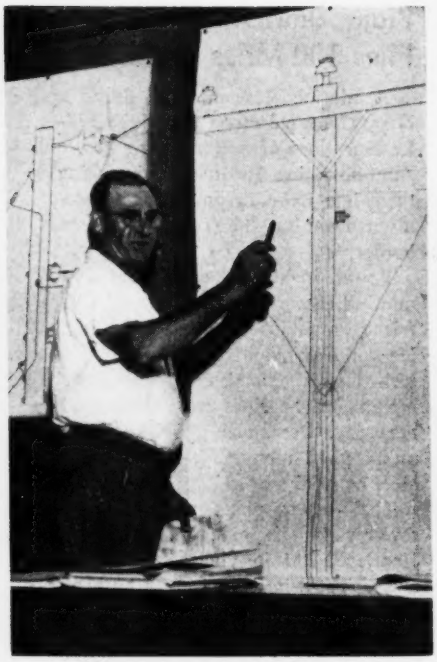
A manual was prepared which set forth the six basic operations to be taught.

These consisted of: (1) Installing and removing hot ties; (2) changing insulators on a single-phase line by the vertical method; (3) changing insulators on a single-phase line by the side method; (4) changing insulators or crossarms on a three-phase line by the vertical method; (5) changing insulators or crossarms on a three-phase line by the side method; and (6) changing insulators on a running corner. The manual also gave a breakdown, with illustrations, of tools required.

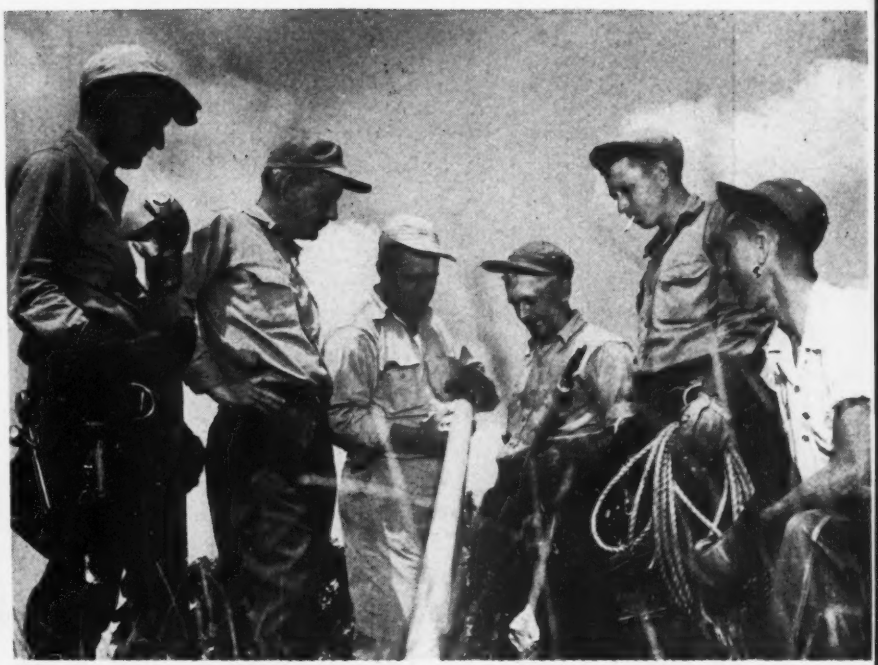
One foreman was selected from each division and trained to teach the six basic operations to the crews of their divisions. As part of their training, trainers worked with a "guinea pig" crew on poles erected for that purpose. A representative of a hot stick tool manufacturer assisted in this phase of the work.

Supervisors and foremen were then called together for an "appreciation" meeting. They were told why the hot stick school was necessary and why 12-kv distribution was being extended. They were shown what the basic training operation would consist of. This gave the trainers an opportunity to gain more experience in training. Foremen were given a chance to criticize the school and make suggestions.

Two-Day Class . . . Actual training of all linemen is being accomplished by bringing in one crew at a time in each division for the two-day period of in-



2 Then crews were brought into classroom to discuss problems of the changeover



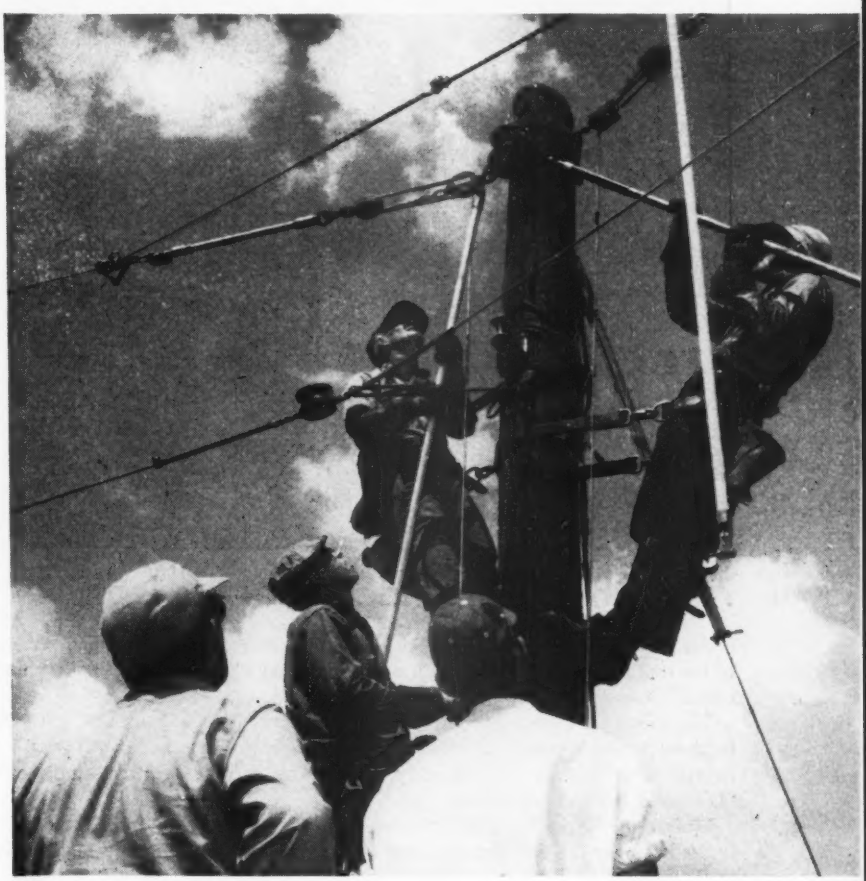
3 Next, linemen took to the field to study six basic problems involved in the use of hot sticks on the higher voltage. Here they get some pointers from a field instructor

Hot Sticks

struction. Starting of this training was staggered in the three divisions so the director of the program could spend the first week with each trainer.

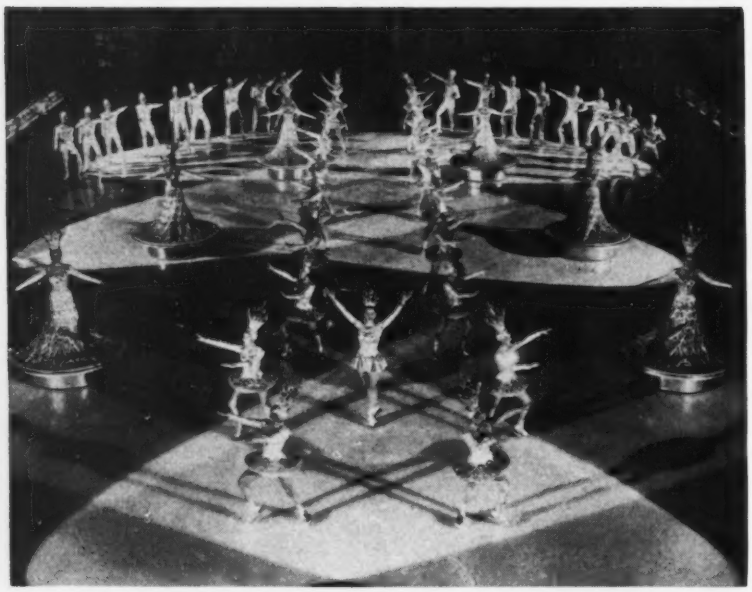
Class and Field . . . Facilities have been provided for the program in each division. Actual training is combination of classroom and field work. After an introduction by the division superintendent concerning overhead lines, the trainer goes over the general program and, with drawings, explains one of the basic problems. The men ask questions, and then the class moves outdoors where linemen in the class carry out the project on poles that have been set up in the yard. The group then returns to the classroom and the same program is followed on another of the basic problems.

It is planned that when training on the six basic problems has been completed the program will be supplemented from time to time with training in other hot stick operations.



4 Finally the men are sent up dummy poles to practice what they have learned. Bullock and Dumont feel two-day course is good training for new line work they'll have to do

In New York They're Putting . . .



. . . Light's Diamond Jubilee on Ice

An ice show has teed off (unofficially) the celebration of the 75th anniversary of the first incandescent light by using as its Grand Finale a production number called "Diamond Jubilee of Light."

The show, Ice Capades of 1954, opened last week in New York and will play to about 3 million people in 25 cities during the next 47 weeks. It will wind up its run next July in Atlantic City, focal point of the electrical industry's "Diamond Jubilee" celebration.

More than 50 skaters depict the evolution of artificial light from the candle to the kerosene lamp to the gas lamp to the open electric arc lamp and finally to the invention, 75 years ago by Thomas Edison, of the incandescent lamp.

Mirrored and sequined costumes of the performers are outlined with hundreds of miniature bulbs and set off against lights from a huge chandelier.

Plane Downs 3 SPA Lines, Flies 100 Miles to Base

A Marine Reserve Pilot flying a Navy Corsair crashed into three 138-kv high lines of Southwestern Power Administration last month, knocking them into Lake Texoma behind Dennison Dam on the Texas-Oklahoma border.

Power in the area was out 7½ minutes, according to James V. Alfriend, assistant SPA administrator. He said Oklahoma Gas & Electric Co picked up the load until emergency repairs on the lines were completed next day. Permanent repairs will be made when material becomes available, he said.

The fighter plane was damaged severely but it managed to reach Hensley Field in Dallas, 100 miles away. The wires threw up a flash of blue light when they hit the water, causing frightened fisherman to speed to shore. The fishermen said the pilot apparently had tried to dive under the transmission wires, about 75 ft above the lake.

In Dallas Lt Col William Crowe, Marine Air Reserve Commander, said the pilot, whom he did not identify, would probably be disciplined. He had high praise, however, for the man's flying ability in getting the plane back to base.

Utility Group Discusses BPA Funds Requests

Appropriation requests to be made by Bonneville Power Administration to Congress were discussed by BPA officials with members of the Pacific Northwest Utilities Conference Committee at a recent meeting in Tacoma, Wash.

This attempt to get "clearance" from top power management on future needs is a new development, said Dr Paul J. Raver, BPA administrator. The committee will seek to get transmission facilities in line with hydroelectric projects now under construction so that prompt power transmission will be possible when new generators go into operation.

"We want to be sure that the items of new construction and the construction now under way are in accordance with the needs of the power distributors who buy from Bonneville," said Raver.

It pays to specify *Kuhlman* standard transformers

As every user of transformers knows, such apparatus equipped with special accessories or special electrical characteristics usually costs a great deal more than standardized units. But Kuhlman Transformers, built to EEI, ASA, and NEMA Standards, save you money and can be delivered faster because they are made according to a standardized design and equipped with standard parts that reduce engineering and production time.

These national standards include KVA ratings, dimensions and locations of standard accessory equipment, sizes and locations of terminals, nameplate data, connection diagrams and dimensions for standard auxiliary devices. Today Kuhlman Transformers not only meet these standards, but provide extra factors of efficiency, safety and reliability.

Kuhlman Transformers are soundly engineered and sturdily constructed for years of exceptional service. Kuhlman makes Power, Distribution, Dry Type, Saf-T-Kuhl, Subway, Series, and CSP in standard ratings for virtually every electrical application. Write us today for complete information.

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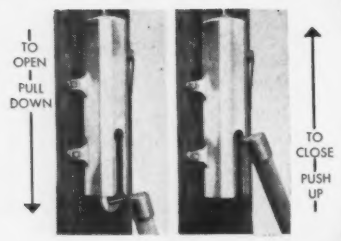
RESTORE SERVICE FASTER ...with KEARNEY OCR REMOTE CONTROL



Now it's easy for linemen to operate oil circuit reclosers from the ground . . . quickly . . . safely. A pull or push with a switch stick on the remote operating handle causes a simple trouble-free flexible cable to close in or open the recloser.

Don't take chances. The Kearney Remote Control eliminates hazards to linemen when attempting to operate a recloser which may not function properly because of misapplication or improper maintenance.

The unit is inexpensive; easy to install . . . to operate . . . to maintain. There is a model for most makes of 15 or 25 KV reclosers; each gives you the same priceless operating safety.

WRITE TODAY for complete data on Kearney OCR Remote Controls.

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FOR BETTER CONSTRUCTION . . . FOR SAFER MAINTENANCE

NW Tie Line . . .

. . . planned by Montana Power Co to supply surplus output to west group of power pool

Additional transmission capacity will be available to supply surplus power this winter to the west group (Washington and Oregon) of the Northwest Power Pool. Under plans announced by Montana Power Co, Butte, a second 100-kv line, 57 miles long, will be built between the company's Kerr and Thompson Falls hydro plants to double the economic capacity of its tie lines to the west. In addition to reducing transmission losses, the new line is expected to greatly improve pool operating conditions. Contract calls for the line to be finished by Dec. 1.

New line, known as Kerr-Thompson Falls B line, will provide an outlet for energy from the third 56,000-kw unit due for installation at Kerr Plant on the Flathead River, near Polson, Mont. It will be H-frame construction carrying three 477,000-cir mil ACSR phase conductors and two ⅜-in. steel overhead ground wires.

Reconductoring Lines . . . To carry greater amounts of surplus power from Kerr and other generating plants in the power pool's East Group (Montana, Idaho and Utah) beyond Thompson Falls, Montana Power currently is reconductoring two parallel, 23-mile, 100-kv lines. These lines tie into the Washington Water Power Co system at Burke, Idaho.

Additional power for the West Group from USBR's 285,000-kw Hungry Horse project will be available over a 230-kv line operated by Bonneville Power Administration. This line parallels the Kerr-Thompson Falls route but then swings northwesterly to its Spokane, Wash. terminal.

Reconductoring began in June on the Thompson Falls-Burke lines, with 556,500-cir mil ACSR phase conductors being strung on one line while the other remained in service. Entire operation will be ready about Sept. 15.

This tie has been extremely valuable in past seasons when Montana Power transmitted surplus power to the West Group to alleviate serious power shortages in the area. During the power-short period of 1952-53, East Group was able to keep the lower-capacity ties loaded to capacity.

East Group Supplies Power . . . Net benefit to West Group from surplus East power was 481,323,325 kwhr. Included in this total was 397,996,000 kwhr (net) sent west through Burke and 83,327,325 kwhr replacement energy supplied to Victor Chemical Works' elemental phosphorus plant at Silver Bow, Mont. Victor, a BPA customer, received this energy from Montana Power during the power shortage.

Burke tie carried peaks in excess of 95,000 kw. Monthly benefits during critical shortage period were: October—61,562,000 kwhr; November—83,468,000 kwhr; December—75,111,000 kwhr.

Starts Work on Tie Line

Pacific Power & Light Co has started work on a 66,000-v transmission circuit from Bend substation to reach three-and-half miles to the Midstate Electric Cooperative's new Redmond-La Pine line connected with a Bonneville Power Administration substation at Redmond. PP&L District Manager W. A. Lackaff reports the tie line, to cost $37,500, will be used temporarily while the company converts the present Redmond-Bend transmission line from 22,000-v to 66,000-v. Upon completion of the two projects, the connective with REA will be maintained as a standby. Another phase of the Bend program calls for $90,000 additions to main substation.

Chilean Penstock Rises 1,200 Metres

Penstock at Los Molles, Chile, reported to be the second largest in Latin America, rises 1,200 metres (4,590 ft) up the mountain side. The cement piping ties in with the Los Molles Power Plant, which went into operation in December, 1952. Construction of the plant was made possible by money furnished by the International Bank of Reconstruction and Development.

Pumped Storage

Reservoir project is scheduled for completion this fall by Calgary Power Co Ltd

Scheduled for completion this year is a scheme of the Calgary Power Co, Ltd. to pump water up a mountain so it will run down again to produce additional power. This water recovery project will result in an additional production of 80 million kwhr per year.

The project, supplementing the $13 million Spray power development 60 miles west of Calgary at Canmore, Alberta, Can., will cost $450,000.

The project will include taking waters from Goat Creek below the Goat Valley diversion dike with two separate pumping stations and raising the waters up over the mountain and letting it fall into the Goat Valley canal which carries waters to the North Whiteman's Dam. From there it falls through tunnels to the Spray plant and to the Rundle plant farther down.

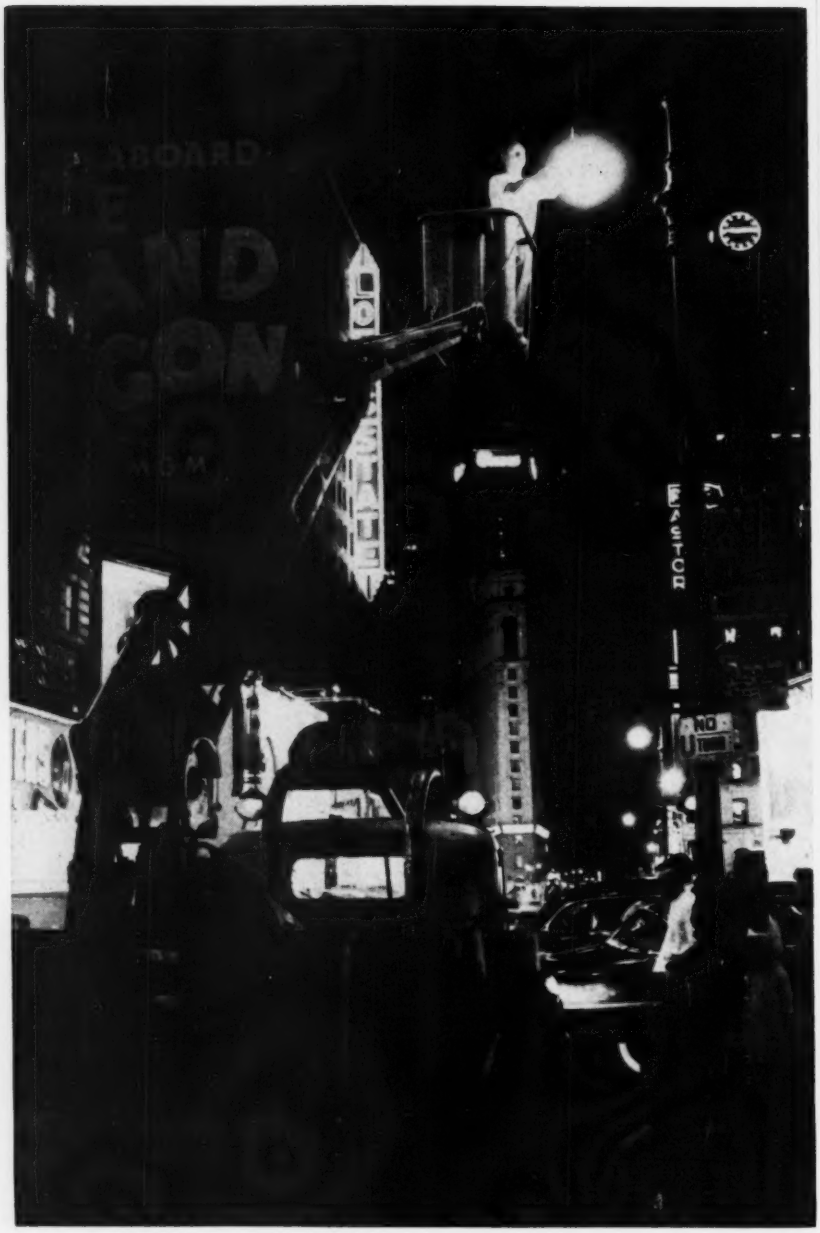
Pumping stations will recover water which would otherwise escape down Goat Creek. The water is partly from natural drainage not caught in the Spray reservoir, upstream from the Goat Valley dike, and partly from leakage in the Goat Dike.

The first pumping installation, a 700-hp motor, will be used to recover 70 cu ft/sec of water. It will be pumped against an 80-ft head through 42-in wood-stave pipe 1,800 ft long.

A short distance downstream a 1,400-hp motor will recover 40 cu ft/sec pumping against a head of 227 through a 36-in. wood stave pipe 2,200 ft long.

Both units will discharge the recovered water into the Goat Valley canal. From the canal the water will drop through a pressure tunnel leading from North Whiteman's Dam through the Spray plant, which operates at a constant head of 905 ft. After being used in the Spray plant it will pass through the Rundle canal into the Rundle plant at an effective head of 325 ft.

The reservoir storage water will be used throughout the winter season so that the recovery of sufficient water to produce the additional power is very worthwhile, saving the necessity of purchasing or producing that much additional steam power.



This latter-day lamplighter is . . .

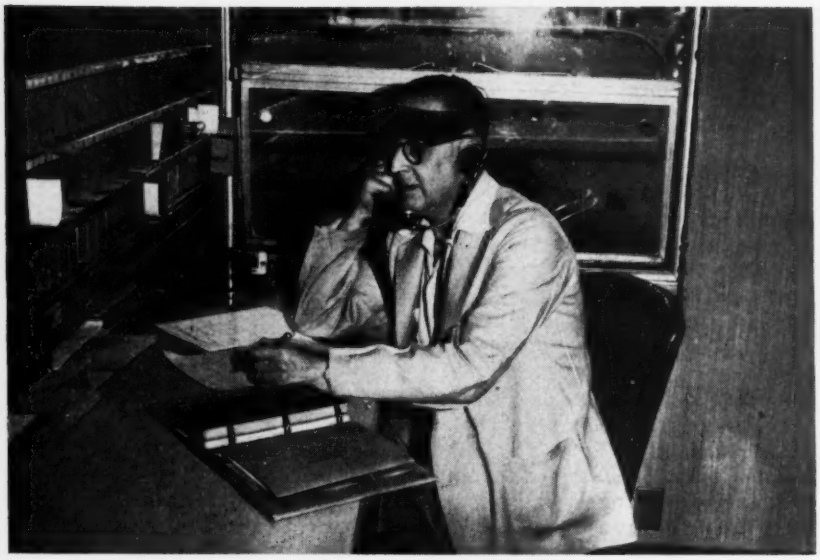
Keeping the White

What's going on on these pages may look like light work, but for Broadway Maintenance Corp, the world's busiest lamplighter, it's pretty heavy duty.

Originally founded to keep the neon lights lighted along New York's Great White Way, the company has branched out over the years to handle ordinary city illumination. The job includes servicing the city's myriad stop lights, which at one time were kept up by the police department.

To do the immense job, Broadway Maintenance employs a permanent staff of 500 electricians as well as engineers, draftsmen, designers and

Broadway Maintenance's street lighting dispatcher . . .



. . . sends out the trucks that keep New York alight

in the Great White Way

field supervisors. These men handle all phases of lighting, electrical construction, installation and maintenance.

In one day Mortimer Almuly (top right) street lighting dispatcher, gets as many as 500 calls for street light repair. He in turn orders out the trucks and crews that will put the damaged facilities back in operation. In the picture at lower right, workmen are shown loading one of the trucks at the company's Long Island City yard. A parkway light pole is fixed to the top and will be used to replace one broken off in an automobile crash.

Another truck (left-hand picture) is equipped with a bucket for replacing lamps and globes. Ray Cook, maintenance foreman, is shown replacing a globe at 7th Avenue and 47th Street in Times Square. Electrical controls in the bucket itself enable him to move it to any position.

The work isn't all mechanical—the human element enters the job every once in a while. As a matter of fact, some Broadway Maintenance electricians do part of their work lying in bed. When a resident calls Almuly to complain he can't sleep because a street light is shining in his window, the dispatcher sends a special team post-haste. The company has designed a special shield to deflect the light from the window to the ground. To install one, one workman stretches out on the bed and calls instructions to a cohort until the deflector is fixed at the proper angle.

Colombia Approves Plan for 14 Thermal Stations

The Colombian government recently approved the 1953 budget of Instituto Nacional de Approvechamiento de Aguas y Fomento Electrico which will make possible construction of 14 thermo-electric stations with a total capacity of 40,000 kw. Money provided for the program amounts to $6,206,396. Preliminary studies for the plants are now being undertaken.

Power generated at the plants will be consumed in rural areas that have not had electric service up to now. Power is expected to be used for such operations as drying rice and husking corn.

The institute's program also includes studies on construction or expansion of 12 hydroelectric stations to produce a total of 20,000 kw. It is expected that the whole program can be carried out in less than two years.

The thermal plants will be located at Valledupar, Fundacion, Remolino, Sincerin, Zambrano, Sincelejo, Monteria, Zarzal, Guamo, Villeta, Sesquille, Duitama, Soata, and Guamal.

According to Ministerio de Fomento the program will not interfere in any way with the vast electrification plan in development for big power plants which the institute is to start in cooperation with the National Planning Council.

'Traffic Lights' for Fish . . .

. . . is one of methods being tested by British Columbia fisheries experts to keep salmon from being cut up by dam turbines

Fisheries scientists in British Columbia are experimenting with varied underwater "traffic lights" and electronic barriers in search for a method of keeping migrating young salmon out of lethal power dam turbines, spillways, and irrigation diversions.

In tests being conducted at Cultus Lake and its outlet, Sweltzer Creek, in the Fraser Valley, research workers of International Pacific Salmon Fisheries Commission and Canadian Department of Fisheries are seeking to control the natural seaward movement of young sockeye with sound, light, darkness, air bubble walls, and various electrical current fields, in an effort to replace cumbersome and expensive mechanical screens.

Physical Repulsion . . . Objective of the research is to determine if Fraser sockeye can successfully be guided or repulsed by physical stimuli. Present tests are designed to go quickly over the whole field in order to pick out the method or combination of methods which looks most promising.

In the experiments, an elaborate system of pens, enclosures, fine mesh fences, and wires greets the migrating salmon as they leave the lake. As new groups of sockeye arrive each day in the test area, they may be offered a choice of darkened or lighted path to identical traps where the number making the choice can be counted.

In another phase, a wall of dancing air bubbles cuts off one trap from migrants. Bubble wall is illuminated by submerged lights at night.

Electrical fields involving submerged electrodes in long panels allow tests of the effects of alternating and direct current on the fish. Basic in this experiment is the knowledge that fish appear to be attracted to the positive pole of a direct current system and repulsed by the negative pole. One problem is to determine how much voltage can be used to be effective and still not kill the fingerling sockeye when they come in contact with it.

Turbine Test . . . In another experiment, researchers are working at B. C. Electric Co's Ruskin Dam on nearby Stave River to determine the mortality of year-old fingerlings as they pass through the power plant turbines.

Young sockeye salmon, offspring of fish spawning in Cultus Lake, and bred and transported by the State of Washington Department of Fisheries, are brought to the dam in a tank truck carrying 10,000 at one time. The load is divided into three equal groups and marked for later identification.

Tests consist of releasing the fish to pass through the turbines and comparing their numbers and condition at recapture with recaptured fish released into the river immediately below the turbines. One-third of the fish are released dead into the turbine to act as a check on the catching gear.

Live fish are poured into the power intake tunnel through a barrel-like funnel and pipe into the 9 ft per sec velocity of the tunnel, dropping 130 ft. Some 4,000 cfs of water passes through the 41,000 hp turbine which rotates 120 times per minute.

Heavy cables hold catching nets in the river below the dam. A logging type donkey engine pulls the nets to shallow water for examination of the catch. A bulldozer moves gear and gives added pull on the cables when the river flow is high.

Aim of mortality and direction tests is to provide data for use if power dams must be located in the migration path of British Columbia's spawning salmon.

International Bank Makes Loan for Project in Brazil

SAO PAULO (McGraw-Hill World News)—The International Bank for Reconstruction and Development has made a loan of $7.3 million for electric power development in the State of Minas Gerais in Brazil. Power from the new plant will be used chiefly by manufacturing and mining industries in the state.

The joint borrowers are Centrais Eletricas de Minas Gerais and one of its subsidiaries, Compahia de Electricidade do Alto Rio Grande. The loan is guaranteed by the government.

The project being financed with the help of the Bank's loan includes the building of a dam across the Rio Grande River at Itutinga Falls, a powerhouse with two 12,000-kw units, 130 kilometers of transmission lines, and several substations. The plant is expected to begin operation in January, 1955, and to be in full operation in 1956. Total cost of the project is estimated at $16 million. The Bank's loan of $7.3 million will be used to pay the foreign-exchange costs.

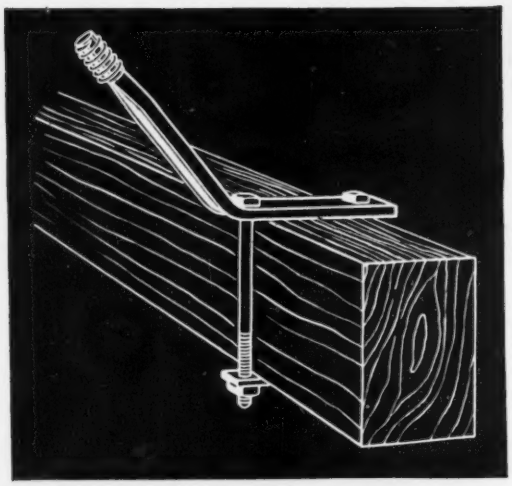
The power from the plant will serve the southeastern part of Minas Gerais, an area containing important deposits of iron ore, manganese, and tin-bearing ores. Industry will take about 80% of the plant's power.

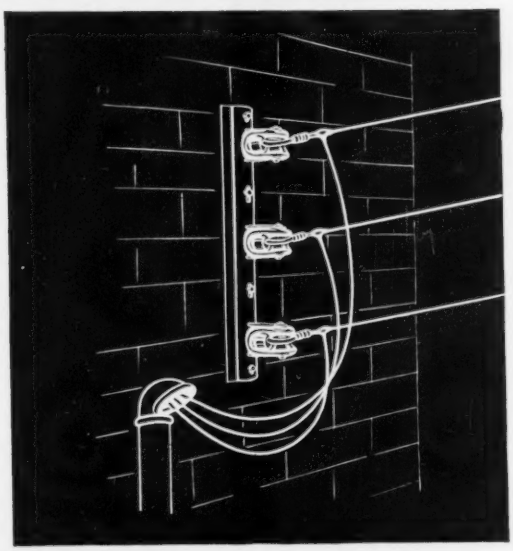
POWER BRIEFS

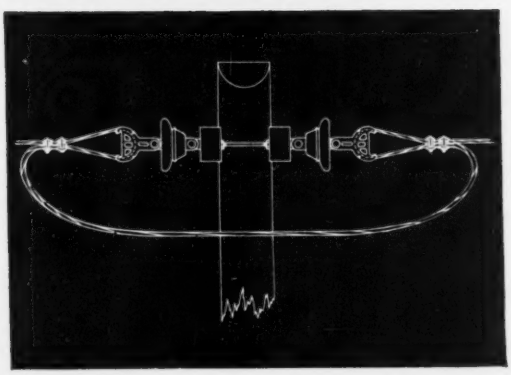
- Second of two new generating units has been placed in operation at the Osage hydro plant of Union Electric Co of Missouri at Bagnell Dam, 130 miles southwest of St. Louis. Started in 1951, this $4-million expansion adds 50,000 to 60,000 kw to the plant's capacity. New units, along with six previously installed, boost plant's capacity past 200,000 kw.
- Grant Lake Electric Power Co, Anchorage, Alaska, has applied to the Federal Power Commission for a temporary permit to construct a hydroelectric project at Grant Lake on the Kenai Peninsula. It proposes to build a concrete dam 30 ft high at the lake outlet with a penstock 5,000 ft long to a powerhouse on Grant Creek. The powerhouse would have an estimated initial output of 2,000 hp and an ultimate capacity of 4,000 hp.
- Southern California Edison Co will install a microwave system for communication. Mountain peak repeater stations will lift signals over the Tehachapi range. Repeaters will be installed atop Verdugo Peak, Los Pinetos, Mt Tejon, Round Mountain, and Hatchet Peak.
- Central Louisiana Electric Co's new generation station near Baldwin has been placed in operation. Known as Teche Station, the new plant has an initial capacity of 25,000 kw and an ultimate capacity of 100,000 kw. It was built at a cost of more than $3.5 million.

LINE CONSTRUCTION BLUEPRINTS

HOW SOME UTILITIES ARE MAKING CONSTRUCTION WORK EASIER . . .
IN WAYS THAT MAY BE HELPFUL AND USEFUL TO YOU.







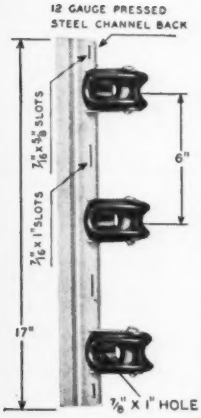
L-M TERMINAL BRACKET for Crossarm Mounting

Cat. No. 311002A1

Made of 1½" x ½" x ⅛" channel steel, hot dip galvanized. Machine bolts and clamping plates are included. Fits crossarms from 3¼" x 4¼" to 4" x 5". One-inch lead head for insulators.

L-M SERVICE RACK

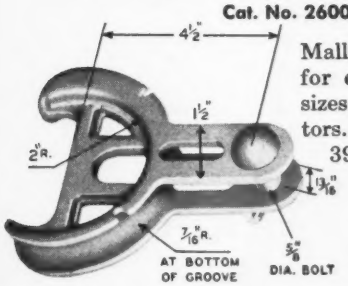
Cat. No. RA-144



A neat-appearing service rack specially designed for mounting on building walls. Extended flared back provides wide, flat mounting surface. Made of 12-gauge pressed steel channel, with large slots for mounting screws. Dry process porcelain insulators have ⅞" x 1" holes, providing ample space for tying conductors.

L-M DEAD END THIMBLE CLEVIS

Cat. No. 260073A1



Malleable iron thimble clevis for dead-ending the larger sizes of all-aluminum conductors. Takes conductors up to 397,500 CM, 19 strand, all-aluminum with armor tape (0.824" outside diameter). Ultimate strength of clevis—12,000 pounds.

Do You Have a Line Construction Problem?

These are just a few of thousands of L-M Line Construction Specialties. If you have a line construction problem, let us help you. We may have items right in stock that will help solve your problem. Ask the L-M Field Engineer—or write Line Material Company, Milwaukee 1, Wisconsin (a McGraw Electric Company Division).

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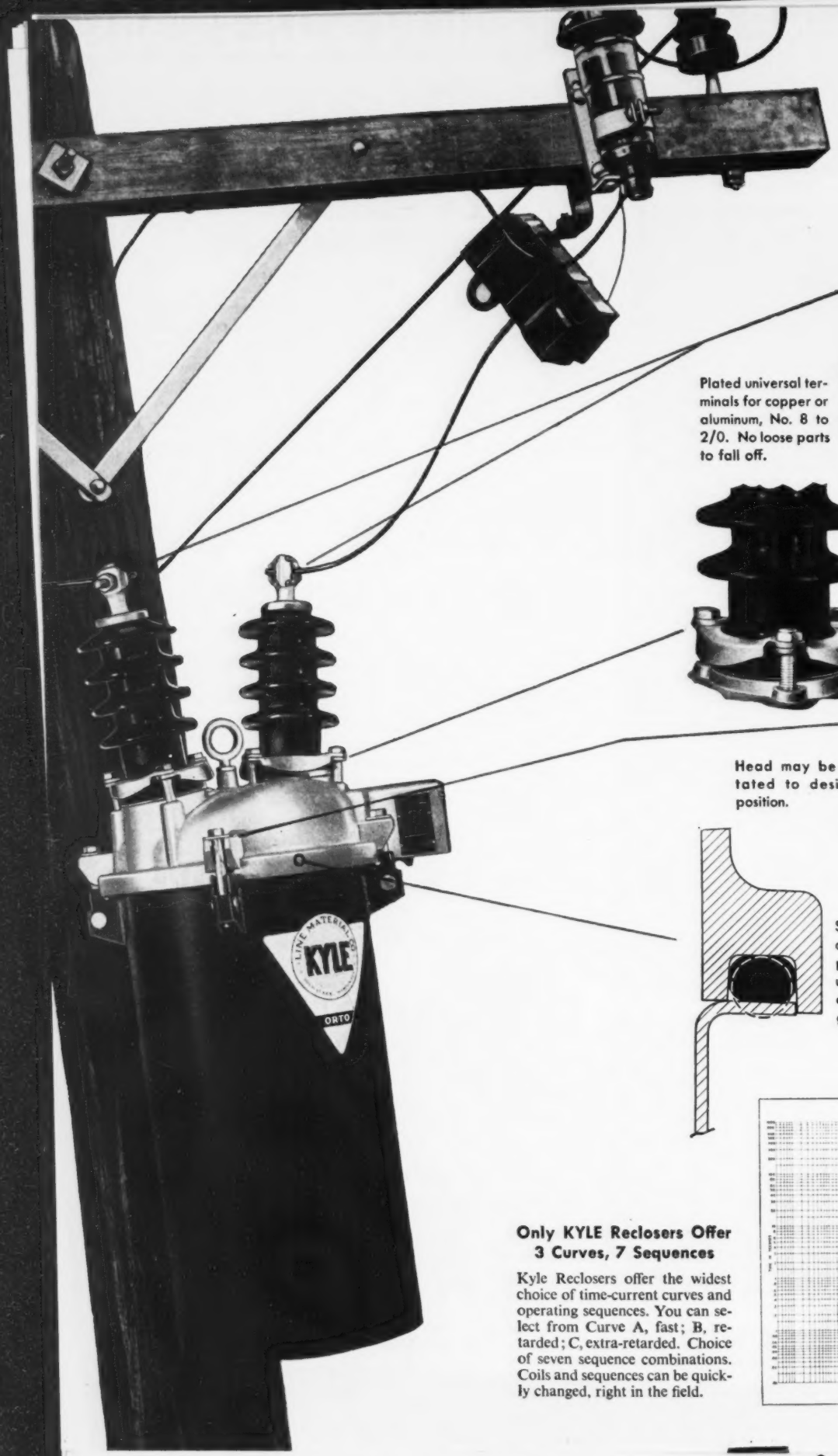
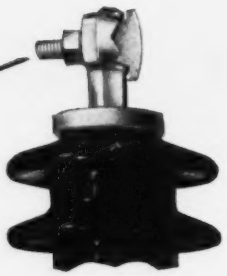
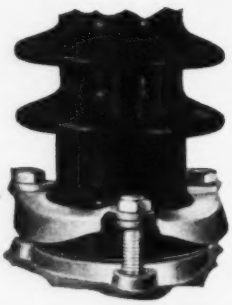
LINE MATERIAL *Line Construction Materials*

LM

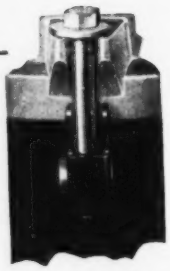




Plated universal terminals for copper or aluminum, No. 8 to 2/0. No loose parts to fall off.

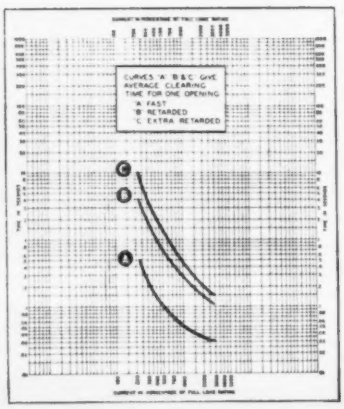


Clamp-on bushings, easy to replace in case of accident.



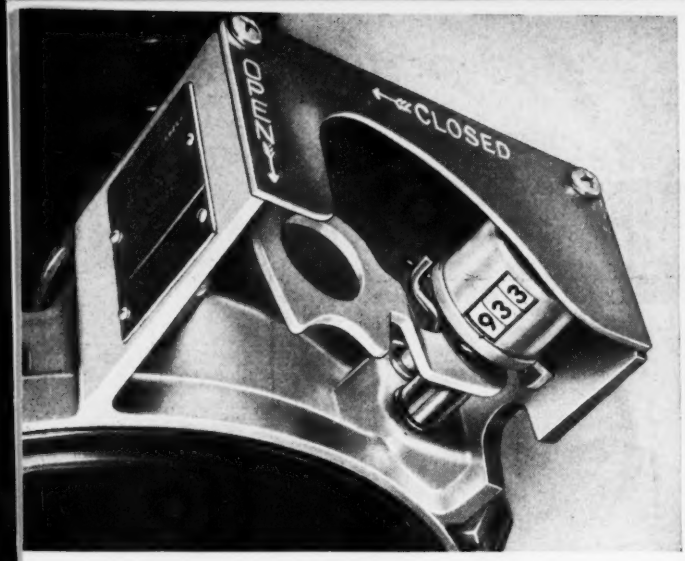
Head may be rotated to desired position.

Soft O-ring type Buna-N oil-proof rubber gasket completely contained and held under proper pressure against tank rim by deep groove.



Only KYLE Reclosers Offer 3 Curves, 7 Sequences

Kyle Reclosers offer the widest choice of time-current curves and operating sequences. You can select from Curve A, fast; B, retarded; C, extra-retarded. Choice of seven sequence combinations. Coils and sequences can be quickly changed, right in the field.



The sleet hood is large, well proportioned. The counter has been improved. It has larger figures that are easier to read.

Opticnal non-reclosing device. With lever down, recloser opens once, does not reclose, for greater safety in hot-line work.

L-M's Kyle® Type H Reclosers Offer New Features For Greater Convenience

by **R. C. KIRK,**
Manager,
Kyle Products Sales,
Line Material Company

Perhaps one of the reasons for the wide leadership of Kyle Reclosers is the close attention we have always given to product performance *and* convenience for the operating man. In line with this policy, further improvements have been made in the Kyle Type H, the world's largest-selling oil circuit recloser.

New clamp type bushings are now being used. These make bushing replacement easy in case of accident. Universal terminals are plated for use with both copper and aluminum.

Tank cover clamping and gasketing have been improved to take full advantage of latest gasketing materials. The head is larger, smoothly contoured, with a large lifting eye. Gasket is now a soft O-ring of oil-proof Buna-N rubber, contained in a deep groove which keeps the gasket under controlled compression against the tank rim. Lips on the groove keep the gasket from falling out when head is raised.

The tank itself is slightly larger. Oil capacity has been increased to 4¼ gallons. This, plus the use of ORTO®, L-M's inhibited transformer oil, is extra oil-life insurance.

Sleet hood is larger. Figures on the counter are larger and more legible. The non-reclosing device, shown above, is now available as optional equipment.

Interrupting ratings have been rounded off so that they are all 25 times the coil size. This represents no appreciable change, as there is still a very large margin of safety in Kyle design.

Advantages of Recloser Operation

The use of Kyle Automatic Reclosers helps maintain continuity of service, because the recloser eliminates a large majority of the faults that blow fuses. This cuts service trips, and eliminates the risk of upsetting coordination by installing the wrong size fuse.

Kyle Reclosers themselves offer many advantages. Their operation is accurate and dependable, in all kinds of weather. Kyles provide positive toggle action, fast opening and closing. They do not depend on gravity, motors, or clockwork. Kyles offer a wide choice of time-current curves and operating sequences. Coils and sequences are easily changed, right in the field!

The Kyle hydraulic mechanism is simple, troublefree. Thousands of Kyles are in regular operation from the tropics to Alaska. More than 100,000 Kyle Type H Reclosers prove the value and dependability of the Kyle operating principles.

Ratings of Kyle Type H Reclosers

Coil Rating, Amperes	Minimum Tripping Current, Amperes	Interrupting Ratings,* Amperes, 14.4 kv
5	10	125
10	20	250
15	30	375
25	50	625
35	70	875
50	100	1250

*Symmetrical RMS Amperes at maximum phase to phase nominal voltage of 14.4 kv. Interrupting ratings are based on a maximum test circuit X/R ratio of not less than 8 and the asymmetrical rating in total RMS amperes is 1.4 times the symmetrical ratings given in the table.

Get Information on Complete Coordinated Automatic Protection

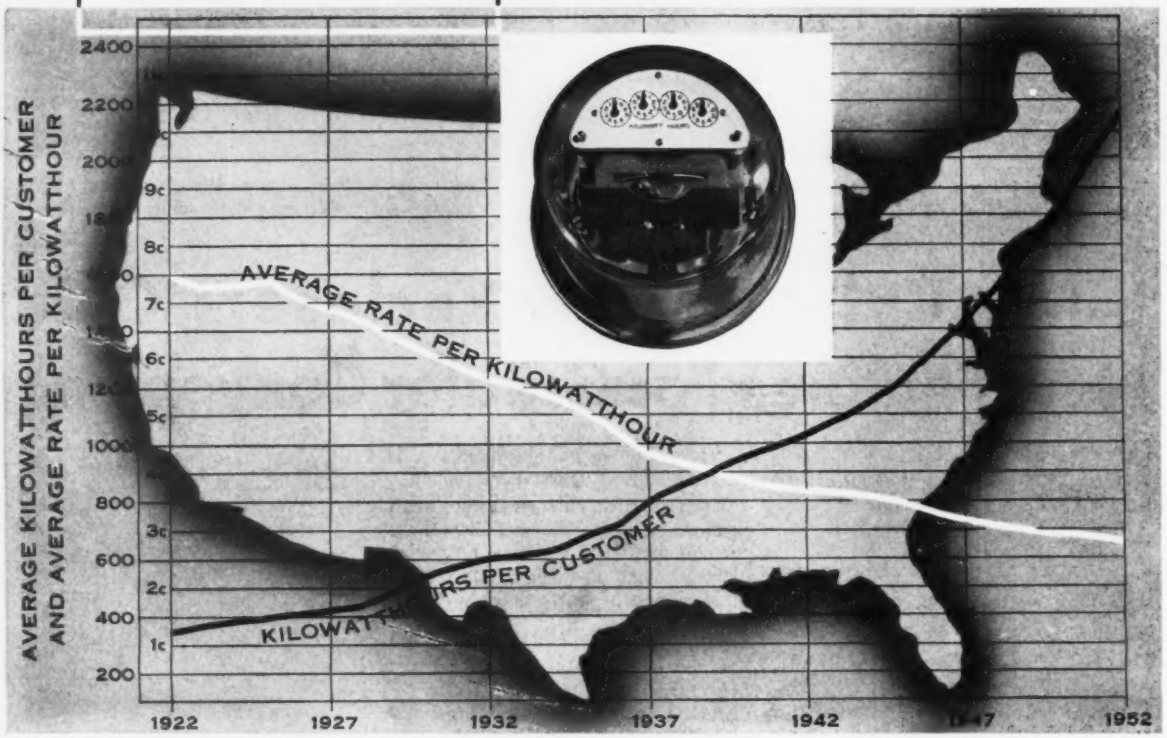
L-M offers a complete line of reclosers and sectionalizers to provide complete, coordinated protection—single- and three-phase—from substation to load.

Ask the L-M Field Engineer for information and bulletins on Kyle apparatus—or write Mr. Kirk at Line Material Company, Milwaukee 1, Wis. (a McGraw Electric Company Division). 143

LINE MATERIAL
Kyle® Reclosers

a full measure of value

Sangamo J Meters



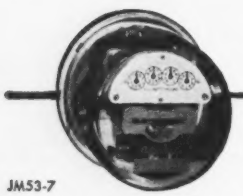
Throughout the years, with steadily lowered rates, Utilities have given consumers a full measure of value.

Just as rates have gone down, meter costs per kw of capacity have gone down and values have been increased.

Meter department executives want definite overall values from the watthour meters they buy. They look for such values as—sustained accuracy under varying temperatures . . . quiet long-life operation . . . ease of calibration and repair . . . resistance to corrosive atmospheres . . . ample capacity to measure heavy loads—values that add up to minimum maintenance. These and many other values have made Sangamo J Meters the choice of metermen everywhere.

SANGAMO

SANGAMO
ELECTRIC COMPANY
SPRINGFIELD, ILLINOIS



Only Measured Facts are Known Facts

JM53-7

NEWS ABOUT PEOPLE

Kapp Heads Interstate Power

Iowa utility's top official succeeds B. F. Pickard, newly named board chairman who will remain as senior officer

M. L. Kapp, executive vice president of Interstate Power Co, has been elevated to president of the company. Kapp succeeds B. F. Pickard, who was elected to the newly created post of chairman of the board. Pickard, who has served as president of Interstate Power for the past 14 years, will remain on active, full time duty and continue to act as senior officer of the utility.

Kapp has been associated with Interstate Power since 1939. For the past four years he has been executive vice president.

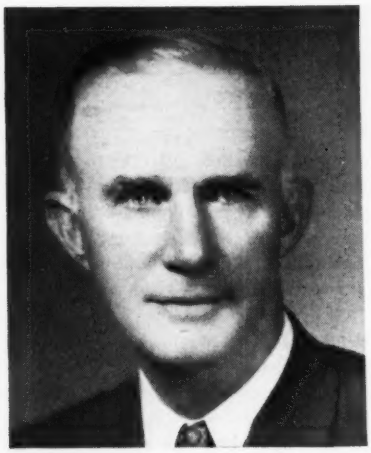
Both Kapp and Pickard will continue to make their headquarters in the general offices of the utility in Dubuque, Iowa.

Kapp was elected president of the Iowa Utilities Association for the year 1950 and Pickard served the utility group in the same capacity during 1944.

M. L. KAPP

Vepco Appoints Kidd a VP

Virginia Electric & Power Co has elected George E. Kidd vice president in charge of personnel. Kidd, formerly manager of the Richmond district of Vepco, replaces T. Norman Jones, Jr, who has retired after completing more than 47 years' service with the company.



GEORGE E. KIDD

Kidd, who graduated from North Carolina State College in 1913 with a BS degree in electrical engineering, worked for two years with General Electric Co prior to joining a predecessor company of Vepco in Newport News. In 1918 he was appointed assistant superintendent of power, a position he held until becoming assistant division manager there in 1930. Between 1940 and 1946 he was successively district manager at Charlottesville, Newport News, Alexandria, and Richmond.

•

F. Elliott Waldron has been appointed distribution engineer for the Salem (Mass.) Electric Lighting Co, the Gloucester Electric Co, and the electric division of the Beverly Gas & Electric Co. His headquarters are now at Salem, reporting to L. A. Frost, distribution superintendent of these New England Electric System North Shore utilities. **Henry T. Betts** has been named superintendent of lines for these same companies, reporting to Mr. Frost. **William L. Reuell** has been appointed assistant distribution engineer of the Gloucester company.

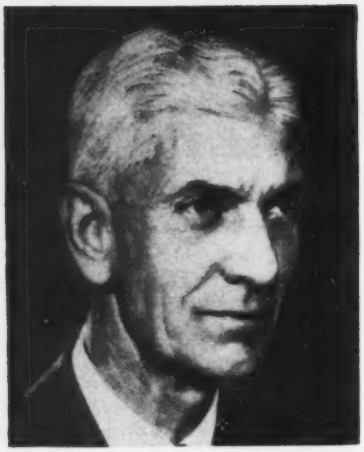
Russell J. Dickson has been named general sales manager of the Leschen Wire Rope Division of H. K. Porter Co, Inc, St. Louis. Dickson, who has been with Leschen for more than three years as Chicago district manager, has spent his entire business career in the wire rope industry.

William L. Harris, Jr, has been named rural consultant of the Hartford Electric Light Co. Harris, active for 25 years in farm development work in central Connecticut, will make his headquarters at the company's main offices in Hartford, Conn.

Harold Newth has been appointed superintendent of Texas Electric Service Co's new Eagle Mountain Plant, now under construction. Newth, formerly assistant superintendent at Handley Plant, has served in the General Office at Fort Worth for the past year directing a power plant design study. **W. G. Marquardt,** Odessa Transmission Division engineer, has been transferred to GO Commercial. Marquardt, who will represent Commercial in Midland, Big Spring, and Sweetwater districts, will be replaced at Odessa by **Dale Scarth.**

Named to Executive Post

Election of Robert L. Westbee as a vice president has been announced by Minnesota Mining & Manufacturing Co. In his new capacity, Westbee will head Minnesota M&M's newly created Electrical Products Division, which includes the Electrical Insulation and Sound Recording Tape Division, Irvington Varnish & Insulator Division, and the American Lava Corp, a wholly owned subsidiary. Prior to the new appointment, Westbee was general manager of the Electrical Insulation and Sound Recording Tape Division for five years.



L. EARLE MERROW

Merrow Promoted

Rockland Light & Power advances veteran employee to post of vice president

L. Earle Merrow, executive assistant of Rockland Light & Power Co. has been appointed a vice president of the Nyack, N. Y., utility.

Merrow, a graduate of the University of Maine with a BS degree in electrical engineering, joined Rockland L&P as superintendent of electrical production in 1931. He was named executive assistant in 1935. Before joining Rockland L&P, he served as an engineer with New England Public Service Co, Augusta, Maine.

A. B. Capron, formerly chief engineer, has been made assistant works manager in charge of the tube mills and engineering in the Tubular Products Division of Babcock & Wilcox Co. In another division appointment, Newell Hamilton, formerly superintendent of the steel mill, was recently named manager of all steel operations.

Walter W. Stake has been named assistant general sales manager of the Permaglas-Heating Division of A. O. Smith Corp. He formerly was employed as Eastern district sales manager at New York.

Herbert B. Reynolds, who has been associated with J. G. White Engineering Corp since his retirement from the post of superintendent of power generation for the New York City Transit System in 1949, has left that company to devote his time to technical writing and consulting work.

Anton J. Diewald, who joined Toledo Edison Co as a lineman 39 years ago, has been named superintendent of the company's line department. He replaces **Gael Brown,** who has retired.

Louis S. Cusato has been appointed manager of employee relations and **Carl A. Beers** manager of communications for General Electric Co's power transformer department, Pittsfield, Mass. Cusato, an electrical engineer, has served as personnel supervisor since 1950 and Beers assistant supervisor of personnel for the past two years.

Calvin H. Brown, formerly an electrical engineer with the Columbia distribution department of South Carolina Electric & Gas Co, has been transferred and promoted to division representative of the firm's industrial and community development department.

ARTHUR F. VINSON

Named a Vice President

Arthur F. Vinson has been elected a vice president of General Electric Co to replace Nicholas M. DuChemin, who will serve as vice president on special assignments for Pres Ralph J. Cordiner. Vinson, formerly manager of wage administration of the Employee and Plant Community Relations Services Division, will serve as vice president of manufacturing and as general manager of the Manufacturing Services Division with headquarters in New York.

J. W. Campbell has been made assistant works manager of the Colorado Fuel & Iron Corp's Wickwire-Spencer plant in Buffalo, N. Y. Campbell, with the corporation for 27 years, has been wire mill superintendent of the Buffalo plant since 1950.

James P. Johnson, formerly engineer in charge of the Blackstone Street steam plant of Cambridge (Mass.) Electric Light Co, has been made chief engineer of Green Mountain Power Corp's generating plant at Burlington, Vt.

George P. Steinmetz, chief engineer of the Wisconsin Public Service Commission since 1935, has been appointed to the commission for the term ending in March, 1959.

Robert H. Gerdes, vice president and general counsel of Pacific Gas & Electric Co, has been elected to the utility's board of directors. He replaces W. G. B. Euler, executive vice president, who submitted his resignation in anticipation of his retirement later this year.

Joseph E. Cordell has been named assistant sales manager for the Electrical Division of Southern States Equipment Corp, Hampton, Ga. Cordell, who just completed a tour of duty with the Navy, was associated with Ebasco Services, Inc, for four years before the term of duty.

William H. Eutzy has been made assistant to the manager of Westinghouse Electric Corp's Television-Radio Division, Metuchen, N. J. Eutzy, with Westinghouse since 1939, succeeds L. J. Fitzpatrick, recently transferred to the Lamp Division at Bloomfield, N. J. (EW, Aug. 31 p 29).

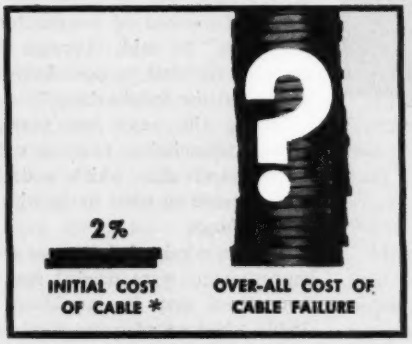
OBITUARY

S. M. Schweller, 59, chief engineer for the Frigidaire Division of General Motors Corp, died Aug. 14. A veteran employee of the Frigidaire Division, Schweller was appointed to the present post in 1937.

Harold J. MacDonald, 54, government sales manager of United States Rubber Co's electrical wire and cable department, died Aug. 19 at Wareham, Mass. He had been associated with the rubber firm for 33 years.

RoZone is approved and accepted by leading utilities, industrials and consulting engineers. 5-conductor control cable RoZone insulated, Neoprene sheathed. Outer sheath of RoPrene (Neoprene)—600V.

Look at Cable Cost both ways



You can look at the cost of cables for generating stations two ways.

One is the initial cost of the cable in relation to the over-all cost of the station. The other is initial cable cost related to the cost of cable failure. In both respects, the initial cost of the cable is practically negligible.

Both add up to the same thing. You can't afford to sacrifice quality for price. It truly costs less to buy the best.

That's why so many utilities specify Rome RoZone insulated cable for primaries up to 15 KV, for station control cable, for street lighting, for distribution and many other requirements.

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* AVERAGE INVESTMENT IN WIRING IN STEAM GENERATING STATIONS 1.9% of station investment, excluding land. $2.75 per KW of nameplate capacity. (Source: "Continuing Property Records for Station Piping, Wiring and Conduit.")

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ROME CABLE ROME, N.Y.

Catching up on back line extension work . . .

Co-op Gets Ready To Go It Alone

First all-rural organization to pay off its REA loans set to burn mortgage and carry on as independent business

At its next annual meeting in March, 1954, the Henry County Rural Electric Membership Corp, New Castle, Ind., will burn the mortgage held on its property by the Rural Electrification Administration. But the management of this first all-rural cooperative to pay its off REA loans is not standing on that formality. Since making its final payment on April 29 (EW, May 11, p. 5), it has set in motion a plan for long-range independent operation.

When the news broke that Henry County had met the final payment 13½ years ahead of time several questions were raised. Uppermost among them: How did they do it? How will they operate in the future?

Simple Strategy . . . Raymond Johnson, president of the board of directors said that the trick in the past was doing nothing but follow sound management practices.

"We were careful about spending our money, so that we could pay off our debt as fast as possible," was the way Johnson put it.

He also paid high tribute to Olin Rhodes for the fine job he did in the nearly nine years he has been manager of the co-op, since his promotion from lineman.

"He knew the system and the organization and has worked in close harmony with the board," Johnson said. "This, together with the fact that board members have been reelected repeatedly, has promoted continuity of policy that contributed largely to our success."

Future Outlined . . . Looking to the future, Johnson emphasized that there will be no rate reduction made for the next four or five years.

"We have not been putting aside the usual amount of reserve for depreciation," he said, "because funds available for that purpose have gone to pay off the indebtedness."

During the next few years, he added, depreciation reserves will be accumulated, after which a decision will be made on what to do with any surplus funds.

Johnson admitted that some system improvements were needed now and that others may be considered desirable when an adequate reserve has been built up. He pointed out that if the system had been 10 years older the co-op would not have rushed payments on the mortgage, but would have prepared for heavy maintenance expense.

"We have been assured by both REA and the banks in New Castle that the co-op's credit is good in case anything should happen to bring about a need for funds sooner than

SPEARHEADING the co-op's drive to pay off its loan ahead of time were Raymond Johnson, president of the board, left, and Olin Rhodes, manager

they can be accumulated," Johnson stated.

The REMC has not gone for what it considers "frills" in order to maintain "storm proof" lines and an unnecessarily high degree of service continuity and voltage regulation.

However, Johnson emphasized, crews are trained to restore service as quickly as possible when lines go down, and every car and truck is equipped with two-way radio. The latter, Johnson feels, has been essential to the operation.

Line extensions in the co-op's area have virtually been completed except for new houses that will be built. A contractor was hired to build the first 400 miles of line when the co-op was getting started. Since then the co-op's own crews have done all line extension work, along with construction and operating.

Small Staff . . . Among other "frills" the co-op has done without are a home economics demonstrator, an engineer, and membership in the National Rural Electric Cooperative Association.

Johnson said that a power utilization man was hired, but only for one year, and that its system studies are handled by a consulting engineering firm.

This trimmed to the bone theory extends on down the line. Operating and office forces are small, Johnson said, but there are enough people to do the job.

Although never joining NRECA, Johnson said his group is willing to cooperate with others in any good activity. They belonged to the Indiana Statewide Electric Cooperatives Association for one year.

Henry County REMC got is first REA loan early in 1936 for approximately 400 miles of line and 1,700 customers. First line was energized in 1938.

From 1936 to 1941 loans were increased to make possible construction of more lines, bringing the debt total to $655,513. Final payment would have fallen due in October, 1966.

Members now number slightly more than 3,300 and net valuation of the system after depreciation is $800,000. Revenue is slightly over $330,000, or $100 per customer.

Cooperation to Continue . . . Though official connection has been severed, Johnson stated that the co-op and REA are agreed that their past relationship will not be altered. The co-op recognizes the good services that are rendered by REA and wants to continue to receive them.

"We are willing to cooperate with REA in any way that we can," Johnson said.

As for advice for other co-ops both Johnson and Rhodes stressed that they have no ideas on how they should operate.

"We do not consider our performance as an example to be followed," Rhodes said. "We think that each co-op must consider its own conditions and decide how to run its own system."

PUDs Seek Permits

. . . for Hells Canyon Dam, says NHCA head. Association needs $75,000 to fight Idaho Power

The president of the National Hells Canyon Association advocating the high level dam at Hells Canyon, told the Portland AFL Labor Council this month that six Washington PUDs are about ready to file for a construction permit on Hells Canyon Dam.

James T. Marr told the group that "it won't be long until engineers are camped on the cliffs making studies of the site."

He said that the association was seeking a war fund of $75,000 to carry on its fight against Idaho Power Co's proposal for three smaller dams on the Snake River between Idaho and Oregon.

Call for Meeting . . . The NHCA, meanwhile, has asked President Eisenhower to arrange a meeting of federal officials with the association to discuss the "basis of a partnership under which the high dam at Hells Canyon can be constructed." Request followed announcement of Interior Department's new public power policy calling for a partnership between federal government and local interests.

Organization Spreads . . . Organization of county chapters of the NHCA got under way in Oregon's Lane County with election of Charles O. Porter, of Eugene, as president of the local group. Charles Sweitzer was named secretary at a meeting when plans for sponsoring a public assembly were laid out in a resolution calling for promotion of NW public power.

Financial help for national organization was added by Oregon Farmers Union at its August meeting when a $500 contribution was authorized.

Yugoslavia to Export Power

International firm set up to develop country's hydro resources. European nations will benefit from increased output

VIENNA (McGraw-Hill World News)—An international company for the exploration of water power for production of electric current in Yugoslavia was founded in Geneva, Switzerland, during July, 1953. It is designed to streamline the project of incorporating the future Yugoslav electrical net into the European set-up.

Participating with Yugoslavia as equal-ranking partners are Austria, Western Germany, and Italy. The official title of "YUGEL-EXPORT" (Yugoslav Electricity Export Co) has been given the new enterprise (founded with the assistance of the United Nations Economics Commission for Europe).

1960 Output to Soar . . . The present utilization of Yugoslav water power stands at 3%; the actual production during 1952 amounted to 2.7 billion kwhr. The 1960 production, amounting to about 42 billion kwhr, will represent a utilization rate of 10 to 12% of the possible capacity.

The most important feature in Yugoslav water supply is the fact that the level of water during winter is equal to that of the summer months, while most Central European water sources offer the most water during the summer, and decrease during winter, forcing either the establishment of huge water storage basins, or the erection of caloric electric power plants.

The area with the greatest water supply is Slovenia, where most of the present Yugoslav power plants are found. They are concentrated along the Drau, Save, and Sotsha Rivers. Following in the number of power plants is the Croatian Federal State, with plants located on the Cetina, Korana, Trebisnica, Drau, and Mur Rivers. The third position is occupied by Serbia, with plants along the Drina, Vlasina, Lim, and Uvac Rivers. The other states within the Yugoslav Republic have large water supply areas but no power plants, due to the backwardness of these states' general economy.

The 1939 production reached 500 million kwhr. A 145% boost was recorded in 1952 when 2.7 billion kwhr were produced, more than half (1.423 billion kwhr) during the winter months, when demand for electrical energy is highest.

Italy Needs Power . . . This rapid development of Yugoslav production of electrical power has not been reached by the industries designed as consumers of electric power. A large percentage (no actual data available) of current will be free for export, beginning with 1960. Main customer is Italy, which will by then have utilized all its water supply which is usable for energy production. Expanding Italian industry, however, needs more current even at the present time, and is offering large contracts to Austria, which is speeding up its production to meet international demands.

The fact that the West German net (with the ever-increasing demand for electrical current for German industry) can be directly hooked up with the Austrian system, and the Austrian one with Italy's net (which might soon have a direct connection with Yugoslavia), makes the internationalization of electric power production a European community problem. The various needs and offers to supply could be concentrated and solved most economically by such an international enterprise.

Changes in Capacity Reported to FPC

PLANT ADDITIONS DURING JULY

State	Utility	Plant	Fuel	Capacity (kw)
Ill.	Electric Energy, Inc	Joppa	S	250,000
Mich.	Wisconsin Michigan Power Co	Michigamme Falls	H	4,800
Wis.	Northern States Power Co	Mobile Unit No. 2	IC	1,000
Minn.	Aitkin Light & Water Commission	Aitkin	IC	1,245
Minn.	Spring Valley Municipal Water & Light Plant	Spring Valley	IC	1,136
Minn.	Minnesota Power & Light Co	Aurora	S	44,000
Iowa	Iowa Public Service Co	Carrol	S	5,000
Mo.	Union Electric Co of Missouri	Osage	H	21,500
W. Va.	Appalachian Electric Power Co	Kanawha River	S	175,750
Fla.	Florida Power Corporation	Higgins	S	40,000
Ky.	Kentucky Utilities Co	Tyrone	S	60,000
Miss.	Mississippi Power Co	Sweatt	S	40,000
Ark.	Jonesboro Water & Light Plant	Jonesboro	S	7,500
La.	Louisiana Power & Light Co	Nine Mile Pt	S	99,000
La.	Central Louisiana Electric Co	Teche	S	20,000
Okla.	West Texas Utilities Co	Paint Creek	S	30,000
Tex.	City of Lubbock	Plant No. 2	S	11,500
Okla.	City of Floydada, Municipal Light & Power	Floydada	IC	1,250
Okla.	United States District of Engineers	Whitney Dam	H	30,000
Mont.	Bureau of Reclamation	Hungry Horse	H	142,500
Calif.	Southern California Edison Co	Etiwanda	S	100,000

PLANT RETIREMENTS DURING JULY

Pa.	Pennsylvania Power & Light Co	South Milton	S	8,000
Ohio	Arlington Light & Power Department	Arlington	IC	625
Mich.	Consumers Power Co	B. C. Monroe	H	150
N. D.	Otter Tail Power Co	Drayton, N. D.	IC	158
N. D.	Otter Tail Power Co	Garrison	IC	530
S. D.	Northern States Power Co	Mobile Unit No. 2	IC	1,000

H—Hydro, IC—Internal Combustion, S—Steam
United States Capacity as of August 1—Hydro, 21,226,235 kw; Internal Combustion, 2,126,035 kw; Steam, 62,774,151 kw; Total, 86,126,421 kw.

Substation Authorized

Construction of an $840,000 substation by Philadelphia Electric Co in Woodlyn, Delaware County, has been authorized by the Public Utility Commission. The plant will tie into a 66-kv line to serve a growing population in the area, which comprises eight boroughs and three townships. Construction is expected to start this month despite protests of a group of property owners against erection of the plant.

Wagner
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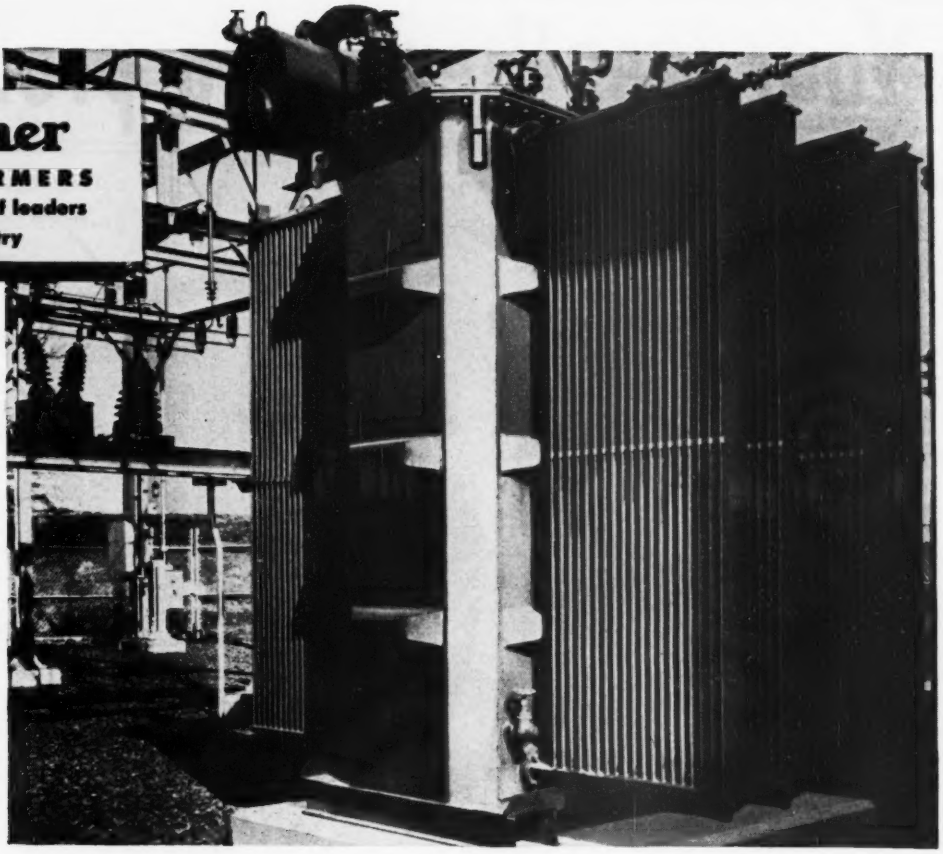


to help make good foods better...

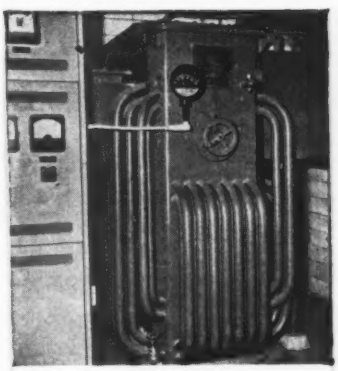
The Vitamin Division of Hoffmann-LaRoche, Inc., at Nutley, New Jersey helps food processors "keep faith with nature." It produces ascorbic acid that protects processed foods from loss of natural color and flavor and adds to their nutritional value. It produces vitamins for the enrichment of bread, cereals, and other grain foods.

The Hoffmann-LaRoche plant—like all modern industrial plants—depends on electricity as its source of power for production. Wagner transformers play an important part in powering production at Hoffmann-LaRoche.

The 4000 kva Wagner Power Transformer, shown above, supplies the power for the plant. Five additional Wagner distribution and substation transformers, rated from 100 to 500 kva, distribute power at the right voltage for use at various load centers throughout the plant.

Wherever electric power is used—in industry, commerce, city and farm—Wagner Transformers efficiently and dependably handle their unending job of supplying proper voltages for every purpose.

A Wagner engineer can help you select the right transformers for *your* requirements. Consult the nearest of our 32 branch offices, or write us.



Wagner 500 kva Noflamol Unit Substation Transformer installed at Nutley, New Jersey plant of Hoffmann-LaRoche, Inc.

Wagner Electric Corporation EST. 1891

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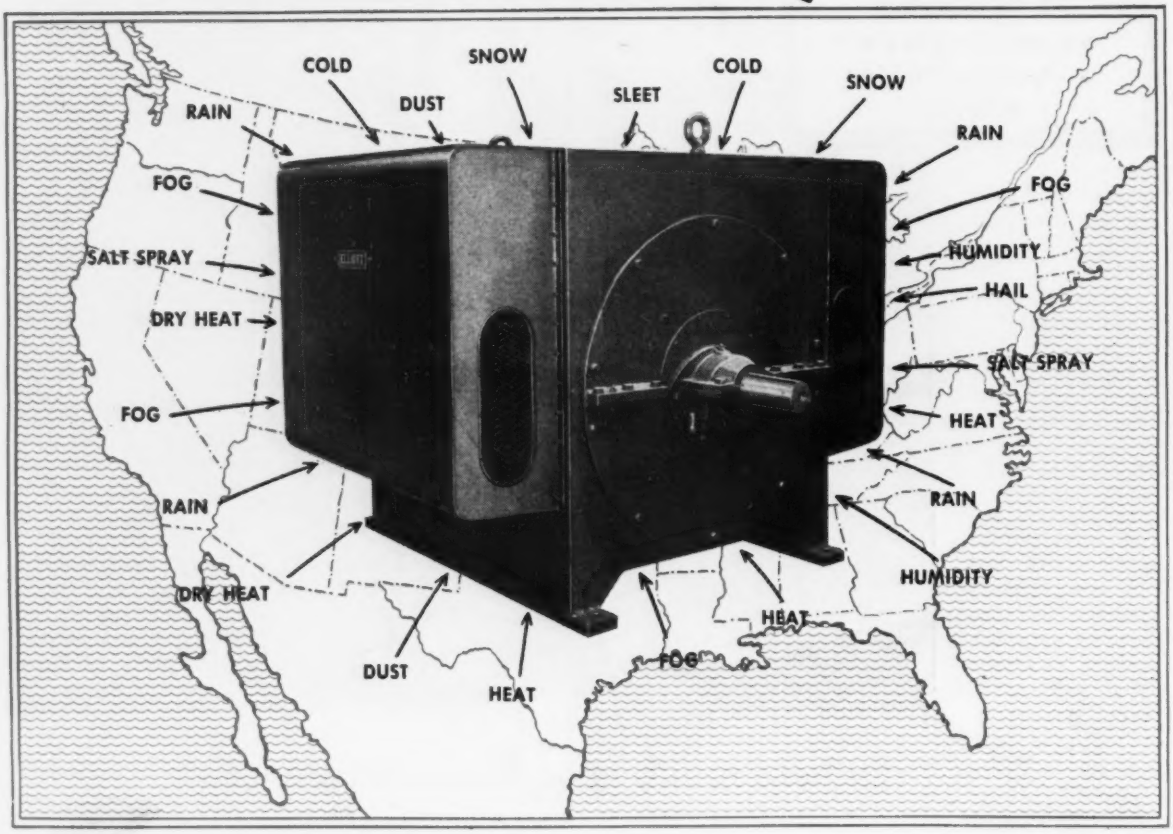

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ELLIOTT *OUTDOOR SPLASHPROOF WEATHER-PROTECTED* MOTOR

Have you a power problem that could be most easily met by an outdoor motor? This Elliott motor has proven the economical answer in many installations previously requiring more expensive designs. We call it Outdoor Splashproof. But it is much more than that. It's protected against all kinds of weather — immune to temperatures from 120 above to 40 below. Defying blizzards, torrents of driving rain, dust, fog and salt spray. Protected even against the intrusion of vermin, wild life, leaves and trash. Your nearest Elliott district office will give you full details, or write Elliott Company, Ridgway, Pa.

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Utility Lights Up

Atlantic City Electric Co dresses up main office building for 1954 celebrations

J. J. TYNAN, Lighting Supervisor, Atlantic City Electric Co

Illumination of Atlantic City Electric Co's main office building is setting the pace for hotels and other buildings in Atlantic City to do the same.

The occasion is the double celebration of the municipality's centennial and the Diamond Jubilee of Light, both in 1954. The latter celebration will be kicked off at the Edison Electric Institute's annual convention next June 1-3.

The lighting display utilizes finger lighting which accentuates the architecture on two adjacent exteriors—59.5 ft and 97.5 ft on the building lines.

All lighting fixtures have brushed copper shades treated for slow aging and to harmonize with the gray stone face of the building. They do not detract from the daytime appearance of the structure and are accessible from windows.

This means that lamps can be changed without special equipment, and cleaned easily.

Varied Arrangement . . . Lower row of fixtures (at second floor level) are mounted 14 ft above the sidewalk.

Those on the 10 main columns, 30 in. wide, on 18-ft centers, have up and down lighting. Those on the 16 intermediate columns (12 in. wide) have only up lighting.

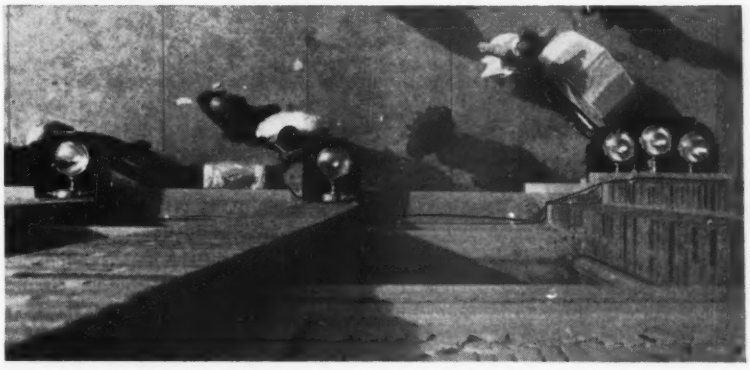
All these fixtures and the two lanterns at the main door have a total of 48 new 100,000 beam cp, 300-w PAR 56 lamps.

Upper row of fixtures (at 5th floor level) is mounted 52 ft above the sidewalk.

These 34 fixtures have only up lighting, using 50,000 beam cp, 150-w PAR 38 lamps.

The lighting circuits are divided, run with twin-conductor, leaded sheath cable to weather-proof lamp sockets, and supplied from 110-v, 3-phase service.

NIGHTTIME view of Atlantic City Electric Co's main office building and . . .



DAYTIME, downward view that shows placement of lighting fixtures

Monthly and Total Yearly Operating Costs of Equipment

1952	House lights	Range	Refrig-erator	Water heater (house)	Milk cooler	Space heater (Milk house)	Water heater (dairy)	Milker	Tool shed and work shop	Water pump	Barn lights
January	$1.40	$2.81	$ .49	$4.10	$1.50	$1.80	$4.00	$ .53	$	$ .61	$1.60
February	2.33	2.69	.48	2.49	1.95	2.19	5.76	.72	.02	.60	2.98
March	1.46	2.43	.48	2.09	2.18	1.23	4.56	.66	.04	.56	1.90
April	1.04	3.40	.53	3.03	2.35	.02	3.59	.70	.04	.68	1.75
May	1.78	3.29	.57	3.20	3.33		4.06	.81	.12	.77	1.42
June	1.01	3.45	.62	3.05	3.35	.02	4.39	.70	.13	.62	.27
July	1.05	4.16	.93	4.44	4.20		3.64	.69		.77	.45
August	.99	3.91	.66	3.53	3.54		2.84	.70		.54	.49
September	1.40	4.74	.67	4.39	3.33		2.96	.71		.71	.85
October	1.67	4.59	.50	4.79	2.66		4.03	.75	.12	.75	1.09
November	1.96	4.41	.52	4.94	2.12		4.85	.80	.12	.92	1.60
December	1.32	1.76	.32	1.10	1.76	1.64	4.22	.60		.92	1.58
Totals	17.41	41.64	6.77	41.15	32.27	6.90	48.90	8.37	.59	8.45	15.98

What Price Farm Power?

Meters on individual appliances at three farms served by Consumers Power Co tell story of small cost and big benefits

For the past year Consumers Power Co, Jackson, Mich., has had individual meters installed on each major appliance used at three farms on their lines. Monthly readings were made on each meter and cost of operation computed.

Typical of the farms studied is the one owned by Cecil Gallagher, where house lighting and small appliances averaged 33½ cents per week over the year. Other findings:

- 9 cu ft refrigerator averaged 13 cents per week.
- Space heater, operated by thermostat, kept milk house at 45 deg F for the four coldest months. Cost was about 40 cents per week of steady use.
- Milk cooler cost averaged a little over 2 cents per 10 gal can of milk.
- Milking machine milked an average of 13 cows at a cost of 16 cents a week.
- Water pump delivered an average of 2,976 gal per week at an average weekly cost of 16 cents.
- Total operating cost of all equipment for one year: $228.43.

Two illustrated pamphlets have been prepared telling the story of costs and benefits. These are being distributed to farm customers throughout the company's service area.

Electrical Wonder Home Opened

C. A. Tatum, president, Dallas Power & Light Co (seated) and G. B. Richardson, vice president, Texas Power & Light Co, listen as C. A. Volger, construction materials representative for the General Electric Co in Dallas, demonstrates the remote control wiring system installed in GE's first small, completely equipped all-electric house opened last month. Known as the Wonder Home, the house is one of a series being sponsored by the company to demonstrate ease and practicability of incorporating modern electrical equipment into small and medium-sized homes. Total of the electrical facilities represents a maximum load on Dallas P&L lines of 53 kw in winter and 46 kw in summer.

Cleanliness Is Now Next To Tele-Viewing

If any doubt exists that television has caught on in the United States, it should be dissipated by the results of a new survey.

According to the latest Admiral Corp survey on television set usage in large American cities, the Cincinnati-Covington, Ky., Ohio, area now has more television sets in use than home telephones or bathtubs.

There are approximately 420,000 TV sets in the Cincinnati viewing area, against 320,000 telephones and 250,000 bathtubs—presumably in use.

According to Admiral Vice President W. C. Johnson this trend is general in most metropolitan centers which had TV service for six years.

Developing a Good System Dispatcher

JESS PASCHALL, Portland General Electric Co

Ask the average operating engineer what his number one personnel problem is today. He will likely tell you that it is finding the young man who can qualify for and be developed into a first-class load dispatcher.

Load dispatching was originally performed by the operators of some central station or substation. This may be why some people still think of this man as sort of a "glorified station operator." He is a man of a profession that unfortunately cannot be taught from textbooks. He is a top operator but not in any sense "glorified." His position is a hard one to fill for two reasons:

- He must possess some qualities that are not readily found in men.
- He should possess a knowledge of operations that is diversified.

Qualifications of a Good Dispatcher . . . We shall not attempt to lay out a pattern from which such a man might be molded, but we will name a few of the qualifications we consider he should have to develop into a good dispatcher:

1. His record of performance, in whatever work he had been doing, should reflect something above the average in aptitude, dependability, and economy.

2. He should be capable of thinking quickly and acting accurately. A college degree in his educational background would prove helpful, but it should not necessarily be a "must."

3. He should, since practically all of his orders are given over the telephone or radio, possess a clear, friendly, and distinct telephone voice.

4. He should be capable of making friends easily and without the advantage of personal contact, which is difficult for some people to do.

5. He should not be too old nor too young. We believe 25 to 30 to be a good starting age while 55 to 60 is a good age to stop shift dispatching. We find, after the 50th birthday, one's ability to think slows down (with due apologies to my many dispatcher friends).

6. He certainly should be able to recognize the value of **economy** in spending the company's money because he will be making decisions that will sometimes run into the hundreds or thousands of dollars.

7. His habits and hobbies should be clean and wholesome to insure the good health he will need to stand the hard grind of sometimes long hours and short shift changes, all of which are a part of the profession.

8. He must have the ability to maintain a cool, calm, and collected attitude under fire, or when serious system disturbances occur.

Long-Range Program Suggested . . . Now to discover a man possessing these unique qualifications, we should have a carefully planned, long-range program of basic training. It should be under the supervision of someone who **knows** the art of load dispatching and who is capable of passing on to others the knowledge he has accumulated over the years. Some of the present dispatchers who are approaching retirement age might be used as teachers.

More than 20 years of this writer's 36 years with his present company as an operating man were spent on the dispatcher's board. Like so many others he is now able to look back and see how his work could have been done better. He conceived and promoted the idea that founded the American Power Dispatcher's Association. What he had in mind at the time is perhaps better explained in the preamble of its constitution:

"For the purpose of encouraging and promoting the formulation and attainment of higher professional standards among system operators (load dispatchers and power dispatchers) and for the purpose of facilitating the interchange of ideas and information, as well as for the development of a spirit of fellowship among us."

As this industry has grown, so have the duties and responsibilities of these men who sit with a hand on the throttle and execute the carefully planned operating programs; to the end that not only will a better and more dependable service go to the customers, but operating dollars will be served as well.

Co-ordinated Power Pools . . . When coordinated pool operation was started, the dispatchers found that the back fence once separating the properties they were operating from those of their neighbors had been removed. They found that an error in judgment by one dispatcher might prove costly to that neighboring company as well as his own.

It was indeed a new assignment for the dispatchers; and here in the Pacific Northwest, where more than 5½ million kw are being dispatched in a pool, these men have measured up to the task quite admirably. Having just completed a 5-year assignment in the Northwest Power Pool as a company operating representative, this writer had the opportunity to view the overall performance of the pool dispatchers. While he thought them to be doing a good job, there seemed to be need for cooperation and a keener sense of economy in the operations.

When will management stop trying to find dispatchers through the process of elimination and set up a program of training men for this important position? A man in this position can, and does, issue orders which cannot be countermanded by another person. He should **know** something about what will be required to execute them. A stretch in the line department, the stations and substations, the maintenance department, and, yes, the administrative department, should give him this knowledge.

We shall have to remind the executive who would frown on the possible cost of such a program that the load dispatcher can lose enough money during an eight-hour shift, or in one hour for that matter, to go a long ways in financing such a scheme. Will management do it? While we cannot speak with authority for the Dispatchers Association, we will, nevertheless, venture to say it will back such a program to the limit and cooperate to the fullest extent in the formulation and execution of it.

4 WAYS to Guard Against Power Interruption

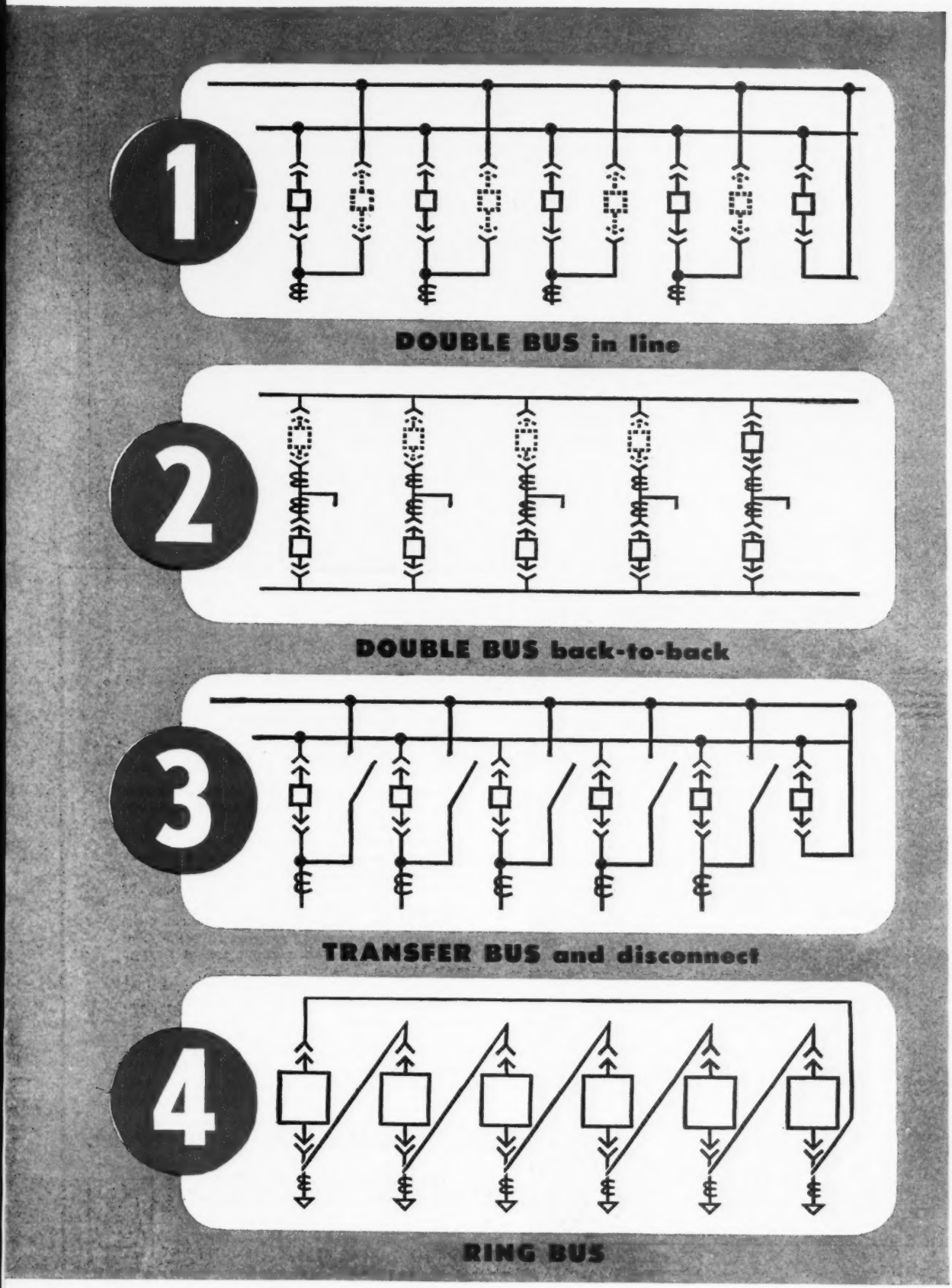
Here are a few of the many different circuit arrangements Allis-Chalmers can provide. All are designed to assure continuity of service. Each one is specially suited for specific situations.

With Allis-Chalmers switchgear, all these circuit schemes have one advantage in common. Each arrangement shown can be built into standard units of Allis-Chalmers metal-clad switchgear without adding extra cubicles. This economy and simplicity, plus the obvious space savings, make Allis-Chalmers equipment especially attractive.

Which Arrangement is Best? A study of your problem is needed to answer this question. Any one of these arrangements may be best for your plant. Or maybe an entirely different scheme is needed. In any case, Allis-Chalmers engineers can help you work out the best scheme for you . . . one that provides ✓ economy, ✓ simplicity, ✓ space saving, and ✓ uninterrupted service.

For complete information, call your nearby A-C district office, or write Allis-Chalmers, Milwaukee 1, Wisconsin. A-4135

ALLIS-CHALMERS


1
DOUBLE BUS in line
2
DOUBLE BUS back-to-back
3
TRANSFER BUS and disconnect
4
RING BUS

new station start-ups... C-E equipped...

Jan — July '53

These new utility power stations (located on new sites) were all placed in service for the first time in the period January—July 1953.

Present station capacities range from 44,000 kw (one of two units) to 325,000 kw (two of six units). Aggregate capacity as represented by C-E Boilers installed, under construction or on order to serve these stations is 1,898,000 kw.

Five of the seven stations have reheat units with steam temperatures ranging from 950/950 F to 1050/1000 F. Boiler design pressures range from 1350 to 2150 psi.

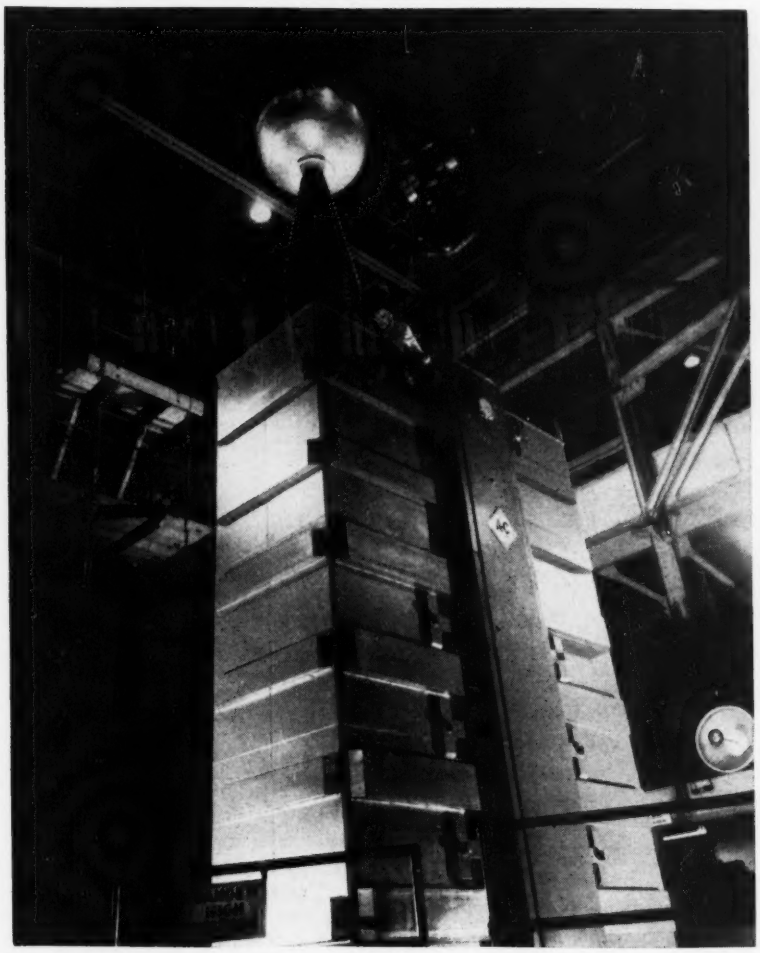
All boiler units are designed for multifuel firing and all but one are equipped with tilting, tangential burners.

The two latest stations to be placed in service—Portsmouth and Etiwanda—have controlled circulation boilers. B-696

COMBUSTION ENGINEERING, *Inc.*

Combustion Engineering Building
200 Madison Avenue, New York 16, N. Y.

ALL TYPES OF STEAM GENERATING, FUEL BURNING AND RELATED EQUIPMENT



ALLIS-CHALMERS completes tests on 600,000-v transformer which is slated for experimental work at the firm's West Allis Works. Four-ft diameter corona shield tops 17-ft bushing

Finishes Tests on 600-Kv Unit

Allis-Chalmers' 600,000-v transformer undergoes impulse and 60 cycle testing. Bushing is 17 ft in length

Completion of impulse and 60-cycle tests on a 600,000-v, single-phase power transformer has been announced by Allis-Chalmers Manufacturing Co. In addition to the 700-kv low-frequency tests, the transformer was given AIEE impulse tests of 1,600-kv full wave and 1,840-kv chopped wave.

The 5,000-kva unit, according to Allis-Chalmers engineers, is built to withstand 600-kv, 3-phase transmission line service with lightning arresters now available, or 880-kv service when suitable protective equipment becomes available.

The transformer was built primarily to determine whether present basic data and calculating methods will be adequate to design power transformers at voltages far beyond those now being planned. The unit, latest step in a five-year development program aimed at more efficient co-ordination of high-voltage insulation, will be used for experimental and test work at Allis-Chalmers' West Allis Works.

17-Ft Bushing . . . Overall length of the bushing is 17 ft including the 4-ft diameter corona shield. According to Allis-Chalmers engineers, similar shields atop high voltage bushings may become a distinguishing mark of EHV transmission equipment.

Other new design features of the transformer include very low oil requirement and final clamping of both core and coils after assembly in the tank.

Allis-Chalmers reports that experience gained in building and testing this transformer will be put to use in future commercial transformers.

Insulator Marketing Deal Ends Westinghouse Output

Westinghouse Electric Supply Corp. New York, and the Porcelain Products, Inc, High Voltage Division, Parkersburg, W. Va., have concluded a marketing arrangement providing for Wesco to distribute nationally the high voltage insulators and associated insulator hardware manufactured by Porcelain Products, Inc. This arrangement was announced jointly by M. P. Nickerson, Wesco's vice president, and G. M. Ruoff, Porcelain Products' vice president.

Westinghouse's Porcelain Division at Derry, Pa., will devote its entire manufacturing facilities to components for Westinghouse Electric Corp apparatus. This move will end production of insulators by Westinghouse.

The addition of Wesco's marketing capacity is being served by a planned program of additional facilities, modernization and increased production area now being completed by the Parkersburg plant of Porcelain Products.

To Make Bigger Units

General Electric Co's Medium Steam-Turbine, Generator and Gear Department has asumed increased product responsibility. Effective immediately, the department will manufacture and market non-reheat turbine generator units ranging from 2,500 kw up to and including 44,000 kw. Following four new types will be built at Lynn, Mass., River Works: 30,000, 33,000, 40,000, and 44,000 kw units. Prior to this, biggest unit manufactured by the department was 20,000 kw.

MANUFACTURING BRIEFS

General Electric Co will begin construction immediately of a $500,000 plant in Jonesboro, Ark., to manufacture electric motors for blower and air conditioning equipment. The 70,000-sq ft plant is expected to be in operation early in 1954.

Westinghouse Electric Corp's plant at Attica, N. Y., will become a branch plant of the firm's Motor and Control Division, whose main plant is in Buffalo. The Attica plant, which has been building industrial stokers, will produce parts for electric motors and a few other products. Last May Westinghouse revealed it was leaving the stoker field and that the Attica plant would continue stoker operation until contracts were fulfilled, which is expected to be Sept. 30.

SALES ASSIGNMENTS

Company Staffs

Minneapolis-Honeywell Regulator Co has named Fred Kaiser manager of the Eastern region with headquarters in New York. Kaiser, field sales manager for the company at Minneapolis since 1949, replaces Arnold Michelson, recently appointed resident vice president with headquarters in New York.

Graybar Electric Co, Inc, has assigned A. P. Torres as manager of its Tampa, Fla., branch. Torres, manager of outside construction and power apparatus sales for the Jacksonville district, replaces R. S. Robinson, who will continue in an advisory capacity.

Allis-Chalmers Manufacturing Co has named H. R. Wilson manager of its Rockford, Ill., branch office. Wilson, with Allis-Chalmers since 1947, formerly was sales representative in the Indianapolis district office of the company's General Machinery Division.

Anaconda Wire & Cable Co has announced that Morse E. Galliett will continue as district manager for its Rochester office, which was transferred recently to Kemper Bldg., Syracuse, N. Y.

Sylvania Electric Corp has named Charles A. Dickinson district sales manager for the Northwest territory of its Radio and Television Division. Dickinson, who previously served as Lighting Division manager in that territory for ten years, will cover Washington, Montana, Oregon, northern Idaho, and Alaska.

Westinghouse Electric Corp has appointed T. P. Jones branch manager of its new Philadelphia branch office, which will operate under Middle Atlantic district headquarters in Philadelphia. Jones, with Westinghouse since 1930, was recently industrial manager for the district.

Libbey-Owens-Ford Glass Co, Toledo, has named Ned P. Kimberly sales representative for its Fiber Glass Division in the Cleveland area. Before joining LOF he did research work with Owens-Illinois Glass Co.

U. S. Steel Corp's United States Steel Supply Division has named William R. Holmes district manager of its Cleveland district to succeed Edwin J. Heffner, who will remain in a consulting capacity. Joseph J. Codd has been made Baltimore district manager to replace Holmes.

Representatives

Roller-Smith Corp, Bethlehem, Pa., has appointed Pacent Engineering Corp, New York, as instrument sales representative for eastern Pennsylvania, Delaware, eastern Maryland, southern New Jersey, and Virginia.

MEETINGS CALENDAR

Illuminating Engineering Society
National Technical Conference, Hotel Commodore, New York, Sept. 14-18.

Edison Electric Institute
EEI-AGA Accounting Division Organization Meeting, Hotel Statler, Detroit, Sept. 15-18; Accident Prevention Committee, Radisson Hotel, Minneapolis, Sept. 21-22; Prime Movers Committee, Detroit, Oct. 5-6; Transmission-Distribution Committee, Hotel Nicollet, Minneapolis, Oct. 8-9; Industrial Relations Committee, Fall Round-Table Conference, Sheraton Hotel, Chicago, Oct. 12-14; Meter-Service Committee, William Penn Hotel, Pittsburgh, Oct. 19-21; Electrical Equipment Committee, Jung Hotel, New Orleans, Nov. 2-3.

Northwest Public Power Association
Accounting Section, Monticello Hotel, Longview, Wash., Sept. 17-18.

Public Utilities Association of Virginias
Annual Meeting, The Greenbrier, White Sulphur Springs, W. Va., Sept. 17-20.

Maryland Utilities Association
Fall Conference, Cavalier Hotel, Virginia Beach, Va., Sept. 18-19.

Rocky Mountain Electrical League
50th Annual Fall Convention, Broadmoor Hotel, Colorado Springs, Colo., Sept. 20-23.

National Association of Railroad and Utilities Commissioners
Hotel Roosevelt, New York, Sept. 20-26.

Missouri Valley Electric Association
Accounting Conference, President Hotel, Kansas City, Mo., Sept. 21-22; Sales-Rural Conference, President Hotel, Kansas City, Mo., Oct. 7-9.

Instrument Society of America
8th National Instrument Conference-Exhibit, Sherman-Morrison Hotels, Chicago, Sept. 21-25.

International Association of Electrical Inspectors
Silver Jubilee Meeting, Edgewater Beach Hotel, Chicago, Sept. 21-26.

Pennsylvania Electric Association
Annual Meeting-Business Conference, Benjamin Franklin Hotel, Philadelphia, Sept. 22-23; Fall Meeting, Relay Committee, Irem Temple Country Club, Dallas, Pa., Oct. 1-2; Joint Meeting of Transmission-Distribution Committee and Electrical Equipment Committee, Abraham Lincoln Hotel, Reading, Pa., Oct. 8-9; Meter Committee, Fall Meeting, Brunswick Hotel, Lancaster, Pa., Oct. 22-23; Fall Meeting, Systems Operation Committee, Castleton Hotel, New Castle, Pa., Nov. 5-6.

Electric Lines Club of New England
Fall Meeting, University Club, Boston, Sept. 23.

Public Information Program
West North Central Region, River Inn Hotel, Fergus Falls, Minn., Sept. 24; East North Central Region, Columbus, Ohio, Sept. 25; Mid-Atlantic Region, Baltimore, Md., Sept. 30; Steering Committee, Edgewater Beach Hotel, Chicago, Oct. 21; Workshop Conference, Edgewater Beach Hotel, Chicago, Oct. 22-23.

American Institute of Electrical Engineers
Middle Eastern District Meeting, Daniel Boone Hotel, Charleston, W. Va., Sept. 29-Oct. 1; Conference on Application of Motors to Air-Moving Equipment and Symposium on Induction Motors, Hotel Van Orman, Fort Wayne, Ind., Oct. 6-8; Fall General Meeting, Muehlebach Hotel, Kansas City, Mo., Nov. 2-6.

New England Meter Engineers
Fall Meeting, Casco Lodge, Casco, Me., Sept. 24-25.

National Electrical Industries Show
Sponsored by Eastern Electrical Wholesalers' Association, 69th Regiment Armory, New York, Sept. 29-Oct. 2.

Great Lakes Power Club
Plankinton House, Milwaukee, Wis., Oct. 1-2.

Southeastern Electric Exchange
Fall Meeting, Engineering-Operation Section, Carolina Hotel, Pinehurst, N. C., Oct. 1-2; Accounting Conference, Battery Park Hotel, Asheville, N. C., Oct. 15-16; General Sales Conference, Atlanta Biltmore Hotel, Atlanta, Ga., Nov. 19-21.

Interstate Power Club
Hotel Martinique, New York, Oct. 5 and Dec. 7.

American Society of Mechanical Engineers
Fall Meeting, Sheraton Hotel, Rochester, N. Y., Oct. 5-7; Annual Meeting, Statler Hotel, New York, Nov. 29-Dec. 4.

Electric League of Western Pennsylvania
4th Industrial Electric Exposition, William Penn Hotel, Pittsburgh, Oct. 6-8.

Indiana Electric Association
Annual Convention, French Lick Springs Hotel, French Lick, Ind., Oct. 7-9.

Association of Edison Illuminating Companies
Annual Meeting, The Greenbrier, White Sulphur Springs, W. Va., Oct. 8-10.

National Association of Electrical Distributors
Fall Meeting, Pacific Zone, Hotel del Coronado, Coronado, Calif., Oct. 11-14.

Iowa Utilities Association
Management Conference, Hotel Fort Des Moines, Des Moines, Oct. 12-13.

Electrical Association of Philadelphia
Biennial Electric Progress Show sponsored by Manufacturers' Division, Convention Hall, Philadelphia, Oct. 13-15.

American Standards Association
4th National Standardization Conference and 35th Annual Meeting, Waldorf-Astoria, New York, Oct. 19-21.

University of Texas
Power Distribution Conference, Department of Electrical Engineering, Lower Colorado River Authority Auditorium, Austin, Oct. 19-21.

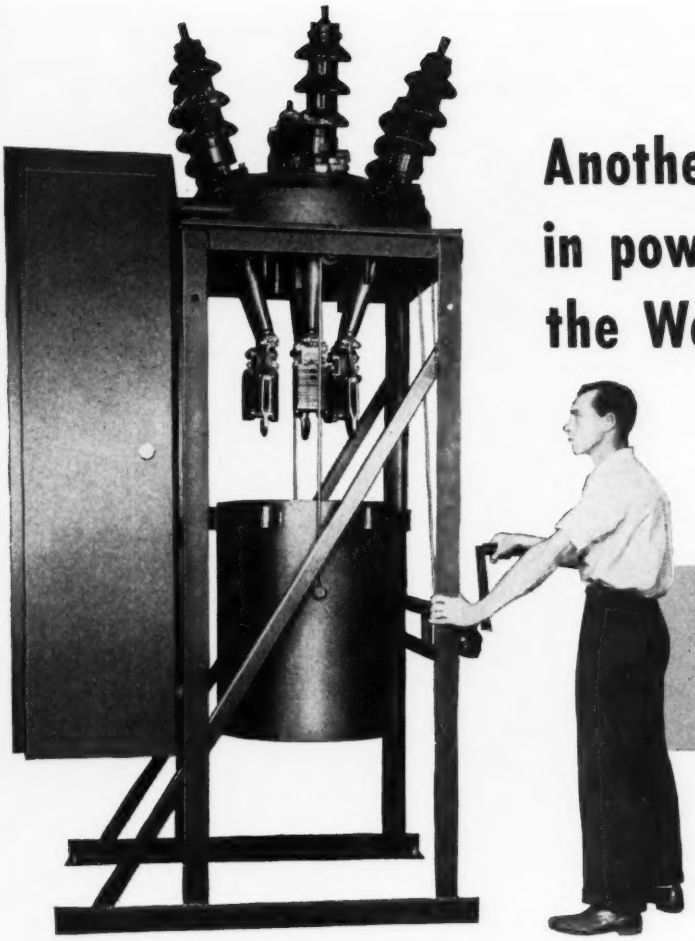
Oklahoma Utilities Association
Electric Light and Power Division, Eastern District, Vinita, Okla., Oct. 22; Western District, Norman, Okla., Oct. 23.

National Electrical Manufacturers Association
Annual Meeting, Haddon Hall, Atlantic City, N. J., Nov. 9-12.

Wisconsin Utilities Association
Electric and Gas Section Convention, Schroeder Hotel, Milwaukee, Nov. 11-13.

Pacific Coast Electrical Association
Annual Hawaiian Conference, Honolulu, T. H., Nov. 19-20.

Public Utilities Advertising Association
Region Two, Annual Meeting, Skytop, Pa., Dec. 10-11.



Another major advance in power breaker design—the Westinghouse Type G

Sound new principles proved in three years of High-Power Laboratory tests

This brand-new, frame-mounted breaker built on advanced engineering principles is ready now, after conclusive tests in the famed Westinghouse High Power Laboratory. The Type G is for application on 14.4-23 kv systems, 600-1200 amp., 100-250 mva.

Single tank—There's only one tank to lift, not three. Dropping the tank shows up all three poles, not just one, and eliminates time-consuming setups of the tank lifter. This cleaner, simpler design has proved itself in our well-known B-line indoor breakers.

Single interrupter—Another milestone on the road to simpler, more rugged construction. You have only one interrupter and contact per phase to inspect, one to maintain. But there's more than adequate reserve to meet the interrupting rating, and mechanical operation life. The single interrupter permits a simple lever system, with no lift-rod guides or auxiliary levers. Interrupters are staggered to give wide spacing and greater clearances in a minimum sized tank.

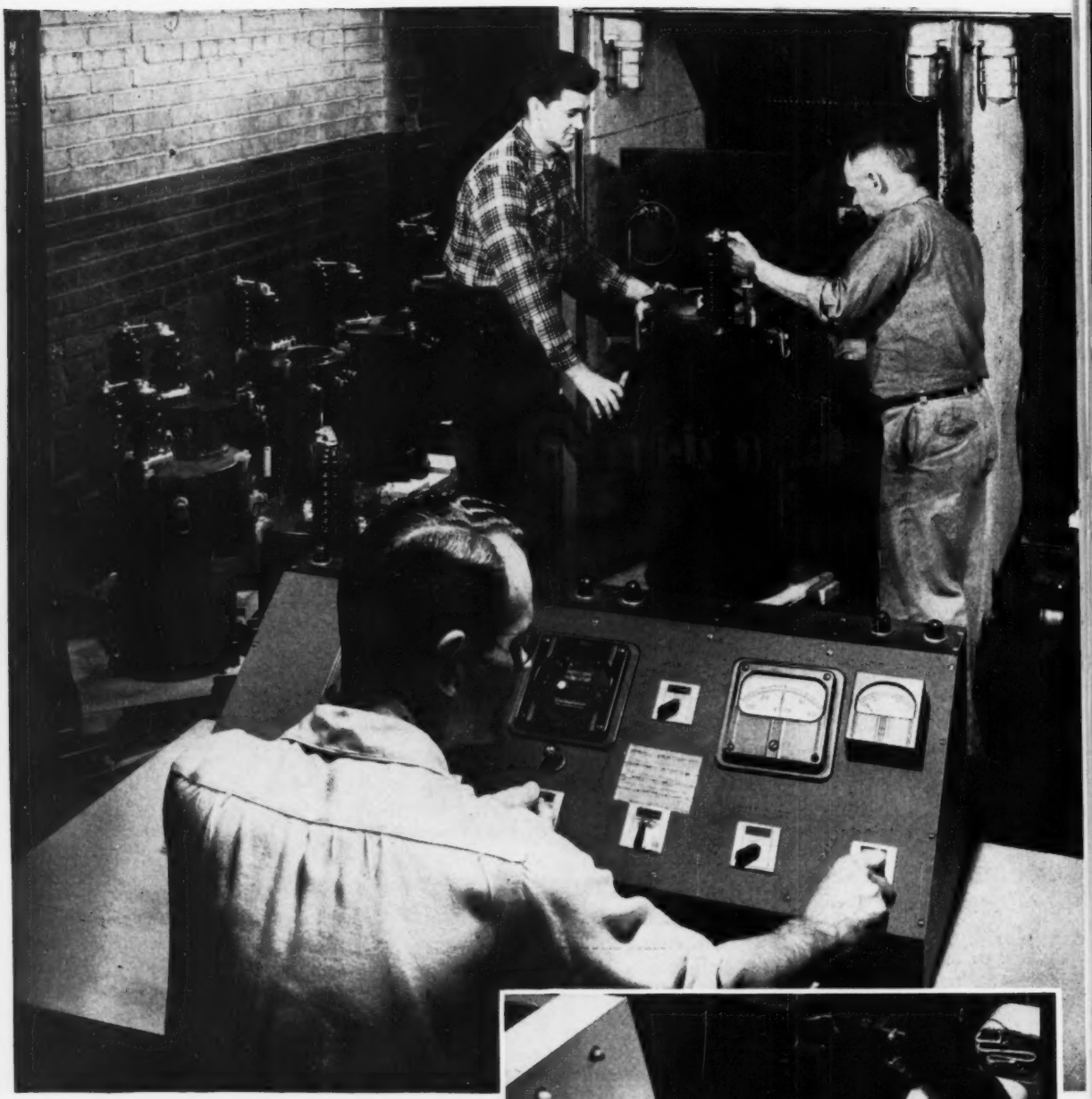
Big breaker features—All the famous Westinghouse big breaker features are retained: Solder-sealed condenser bushings, magnetic De-ion® Grids, Micarta® lift rods, mechanically trip-free solenoid mechanism, heavy-gauge steel tank.

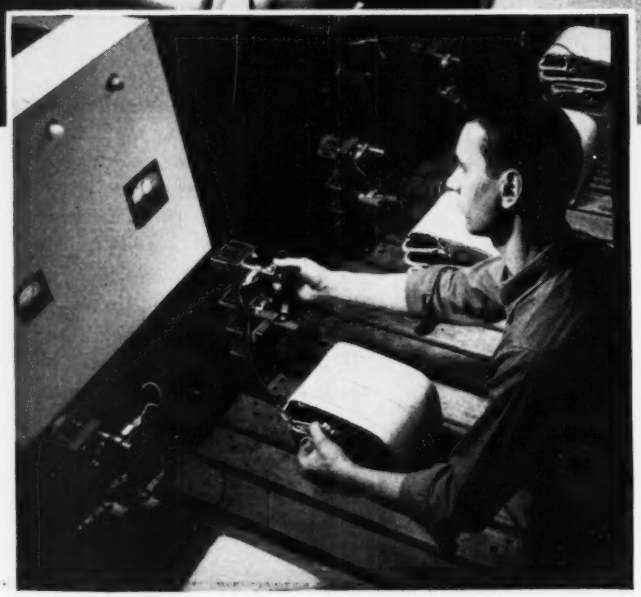
Get more information—Write us now or call your Westinghouse office for a new four-page folder and engineering bulletin that tell more about this new breaker. Write for B-5834 and DB 33-745. Westinghouse Electric Corp., Box 868, Pittsburgh, Pa.

J-60798

YOU CAN BE **SURE**...IF IT'S

Westinghouse





(*Above*) "CSP" distribution transformers undergo this surge test, equivalent to a direct lightning stroke. This procedure checks the production of conventional transformers as well, since the core-coil assemblies come off the same line.

(*Right*) Westinghouse distribution transformer coils pass this high-frequency, turn-to-turn and layer-to-layer insulation test as a safeguard of quality.

Only Westinghouse offers complete proof of lasting distribution transformer quality

Westinghouse tests "CSP®" distribution transformers with both impulse voltage and surge current equivalent to a direct lightning stroke. It takes both tests, systematically applied on the production line, for absolute proof of quality.

Westinghouse engineers reached this conclusion 20 years ago when they were perfecting production techniques for the then new "CSP" transformer. Two years later, the first on-the-line tests supported their conclusion. The winding failure rate at that time was 0.5%.

Lessons learned from this test led to improvements in insulation which cut rejections to 0.012%, a level never exceeded throughout the next seven years of testing every "CSP" transformer produced. *This had a direct influence on conventional transformers as well, for the core-coil assemblies came off the same line.*

In 1937, a high-frequency test was initiated for both conventional and "CSP" transformer coils. This procedure remains in effect today, making the Westinghouse Distribution Transformer the only one with complete proof of lasting quality . . . impulse-voltage plus surge-current testing, plus high-frequency coil testing.

Each of these steps were major advancements toward securing completely uniform and dependable transformers. Your Westinghouse representative will be glad to give you full information. Call him today, or write direct to Westinghouse Electric Corporation, P.O. Box 868, Pittsburgh 30, Pennsylvania. J-70687

YOU CAN BE SURE...IF IT'S Westinghouse

FINANCIAL

Surcharge Hearings Resume . . .

. . . in Oregon. Portland General Electric, Pacific Power & Light and Mountain States Power companies tell their side of the story

The Oregon Public Utilities Commission hearings on steam-cost surcharges by three utilities, last December through May, resumed Aug. 25.

But even as PUC opened the record for Portland General Electric, Pacific Power & Light, and Mountain States Power companies to tell their side of the charges, which resulted from a critical hydroelectric shortage, another issue was thrown into the hearing by State Rep Monroe Sweetland and others which put a new complexion on the controversy.

Despite company objections, Commissioner Charles Heltzel allowed amendment of original complaints to include an allegation that the $4.6 million added to the billings was more than filed and published rates allowed and that tariffs filed were improper.

Legality Issue Raised . . . PP&L Attorney Allan A. Smith argued this question of legality of the surcharges injected a new cause of action, was inconsistent with previous complaints and transcended most of others. He moved that the defendants be required to elect what specific issues they wished to base their complaints. Heltzel denied this motion, although the plaintiff's attorney, Walter Evans, Jr, said he would confer with his clients on the possibility of eliminating some prior points of dispute. During this exchange Smith asked Evans if the August 17 amendment action meant a move would be made to require rebate of the surcharges by the companies. Evans hinted that events would determine an answer.

Class suits in Multnomah County (Portland) and Lane County Circuit Courts have been filed by customers alleging the surcharge was illegal and asking return of the money. The three utility companies have filed demurrers contending the courts do not have jurisdiction over rates which have been filed according to law with PUC.

Cost Tripled . . . With this initial skirmish out of the way, PP&L Vice President W. T. Neill took the stand to review background of the power situation leading to the surcharge plan originally filed in 1951 when a dry season threatened a hydro shortage that winter. He reported steam generation produced or purchased by the three companies the winter of 1952-53 cost nearly three times as much as hydro. He said hydro averaged 2.05 mills per kwhr.

George B. Bocade, PP&L engineer, led off the defense the next day with a report that the steam generation of the Pacific Northwest companies was $10,380,000 during the September-January period, compared with normal $1 million in an average water year. In reply to complaint charges that the company rates allow a return beyond what is reasonable, PP&L Assistant Treasurer, Claude R. Groth, detailed methods used in determining costs applicable to each company in the inter-company pool.

Tacoma's Administrative Code Will Be Amended

The recently-organized Public Utilities Board at Tacoma, Wash., agreed to set aside its proposed "administrative code" after City Manager Frank Backstrom offered to amend the city's regular administrative code to give greater freedom to the utilities in the

LILCo Adds 25,000th Stockholder

Miss Mary A. Dunne, school teacher of Garden City, L. I., who recently became Long Island Lighting Co's 25,000th stockholder, was taken on a tour of the company's properties to celebrate the event. At the company's Glenwood Landing station, John Peck, superintendent of the plant, is explaining the overhauling process of one of the 75,000 kw turbines.

Miss Dunne, who owns securities in a number of companies, said that she chose Long Island Lighting stock at this time because the many evidences of Long Island's growth and prosperity convinced her that its utilities would, by the very nature of their business, be certain to reflect this growth.

conduct of their various departments.

The board originally sought a code which would have set up separate legal, financial, personnel and purchasing departments for the utilities, in addition to those already established under the city manager's administrative code. Strong objections were made not only by Backstrom but by the City Council and the Municipal Civil Service League, after which a compromise was reached.

Certain sections of the utilities code will be incorporated in the city code, allowing maximum freedom for the light, water, and belt line divisions, Backstrom said.

An addition will be made to the city purchasing agent's office to handle utilities buying while a member of the regular city attorney's staff will be assigned to handle utilities problems. The city's central personnel office will handle recruiting duties for utilities but special training and safety programs will continue under light department jurisdiction.

The utilities will maintain a staff as needed to supplement the work of city's regular finance department.

The board revealed it will begin a nationwide search for a director of utilities not later than November. C. A. Erdahl, acting director, will have to make application along with others seeking the job, said Gerritt VanderEnde, board chairman. The City Council is expected to approve the board's plan to pay the director an annual salary of $16,000.

REGULATION

United Fuel Gas Co has received a stay of part of FPC's order allowing a $10 million a year rate hike, pending consideration of company's application for a rehearing. Company has contended that the FPC order which was designed to give it a 6.25% rate of return on its investment actually would bring in only 3.69%. The company explained it wasn't arguing with the FPC, only with the way the rate increases were computed.

Hydro-Electric Power Commission of Ontario Chairman Robert H. Saunders has said recently there will be no increase in the wholesale rates for power to Hydro municipalities at least through 1954.

Today in Utility Finance

YIELDS (%)

Quality	Bonds			Preferred Stocks			Common Stocks		
	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd
DATE									
1953									
Sept. 3	**3.30**	**3.35**	**3.53**	**4.31**	**4.52**	**4.80**	**5.34**	**5.84**	**5.94**
Aug. 27	3.28	3.32	3.52	4.31	4.50	4.78	5.31	5.81	5.89*
END OF QTR									
2nd 1953	3.34	3.46	3.64	4.47	4.70	4.88	5.52	5.93	6.10
1st 1953	3.15	3.23	3.39	4.16	4.41	4.66	4.95	5.24	5.50
4th 1952	2.99	3.03	3.14	4.06	4.22	4.59	4.98	5.33	5.62
3rd 1952	2.99	3.03	3.16	4.10	4.26	4.61	5.18	5.59	5.96

Data: Reis & Chandler, Inc.
* Revised.

EARNINGS

Company	Period Months Ended		Net Income 1953	Net Income 1952	Earnings Per Common Share 1953	Earnings Per Common Share 1952
Arizona Public Service	12	July	$3,527,000	$2,841,000	$....	$....
California-Pacific Utilities	12	July	543,617	516,246	1.99	1.93
Consumers Power	12	July	22,418,160	20,071,606	2.80(a)	2.70(a)
El Paso Electric	12	July	1,629,833	1,499,845	2.04	1.87
Gulf States Utilities	12	July	8,285,686	6,619,314	1.60(b)	1.36(b)
Public Service of Indiana	12	July	11,111,170	9,525,534	2.26(c)	2.42(c)
Texas Electric Service	12	July	8,755,109	7,709,747	....	....

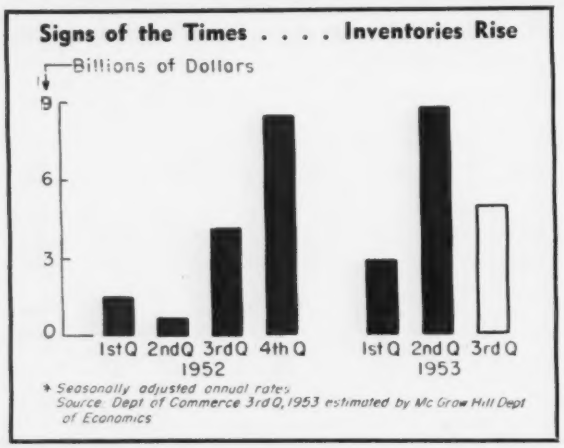
Notes—(a) Based on 6,794,362 shares in 1953 and 6,176,693 shares in 1952; (b) Based on 4,221,832 shares in 1953 and 3,905,210 shares in 1952; and (c) Based on 4,253,069 shares in 1953 and 3,595,367 shares in 1952.

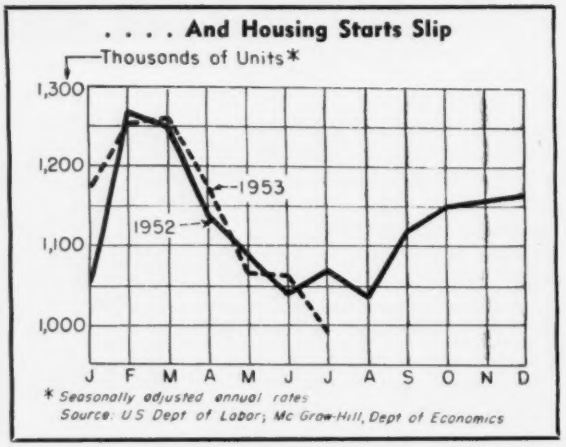
FINANCING

Company and Description	Amount of Offering (000)	Offering Price	Yield to Public
WEEK OF SEPTEMBER 3–9			
Bonds			
Crawfordsville, Ind—electric revenues 1956–74	$1,350	various	2–3%
Debentures			
Central Hudson Gas & Electric—conv debs 3% due 1963	$6,000	100.75%	2.91%
Common Stock			
Central Hudson Gas & Electric—139,978 sh (being offered commonholders on 1-for-15 basis, record Sept. 9 to expire Sept. 25)	$1,575	$11.25	6.23%
Central Illinois Public Service—350,000 sh	6,431	18.375	6.53
SCHEDULE FOR SEPTEMBER—OCTOBER			
Bonds			**Bid Date**
Public Service of New Hampshire—1st mtg due 1983	$7,000	.....	Sept. 14
Louisiana Power & Light—1st mtg due 1983	12,000	.....	Sept. 16
Duquesne Light—1st mtg due 1983	12,000	.....	Sept. 22
Richmond, Ind—electric revenues 1954–84	6,000	.....	Sept. 23
Indiana & Michigan Electric—1st mtg due 1983	15,000	.....	Sept. 29
Mississipoi Power—1st mtg due 1983	4,000	.....	Oct. 6
Kansas Gas & Electric—1st mtg due 1983	10,000	.....	.....
Preferred Stock			
Duquesne Light—100,000 sh $50 par	$5,000	.....	Sept. 17
Kansas Gas & Electric—50,000 sh $100 par	5,000(f)	.....	.....
Indiana Michigan Electric—70,000 sh	7,000(b)	.....	.....
Common Stock			
Pacific Gas & Electric—1,946,829 sh (to be offered commonholders on 1-for-7 basis, record Sept. 15 to expire Oct. 6)	.....	.....	.....
Duquesne Light—150,000 sh (c)	.....	.....	.....
New York State Electric & Gas—337,118 sh (to be offered commonholders on 1-for-8 basis, record Sept. 17 to expire Oct. 5)	.....	.....	.....
New England Gas & Electric—194,916 sh (to be offered commonholders on 1-for-10 basis, record Sept. 30)	.....	.....	.....
Hartford Electric Light—105,500 sh (to be offered commonholders on 1-for-9 basis)	.....	.....	.....
POSTPONED, UNSCHEDULED, AND/OR UNDER CONSIDERATION			
Bonds			
Public Service Electric & Gas—1st mtg due 1983	$30,000	.....	.....
Long Island Lighting—1st mtg	25,000(e)	.....	.....
Southwestern Public Service—1st mtg	12,000(e)	.....	.....
Preferred Stock			
Southwestern Public Service	$3,000(e)	.....	.....
Common Stock			
Long Island Lighting—about 600,000 sh	$.....	.....	.....
Iowa-Illinois Electric & Gas	6,000(a)	.....	.....
Western Massachusetts Electric	4,000(e)	.....	.....
Southwestern Public Service—(to be offered on about a 1-for-13 basis)	.....	.....	.....
Virginia Electric Power—558,946 sh	.....	.....	.....

Notes—(a) To sell enough common stock to yield $6 million; (b) First Boston Corp-Union Securities Corp. will sell the stock to institutions; (c) In addition 34,739 shares will be sold by Standard Power & Light Corp; (e) Estimated; and (f) Company asks FPC to sell the stock privately.

ELECTRICAL BUSINESS OUTLOOK


Signs of the Times . . . . Inventories Rise
Billions of Dollars
9
6
3
0
1st Q 2nd Q 3rd Q 4th Q
1952
1st Q 2nd Q 3rd Q
1953
* Seasonally adjusted annual rates
Source: Dept of Commerce 3rd Q, 1953 estimated by Mc Graw-Hill Dept of Economics


. . . . And Housing Starts Slip
Thousands of Units*
1,300
1,200
1,100
1,000
1953
1952
J F M A M J J A S O N D
* Seasonally adjusted annual rates
Source: U S Dept of Labor; Mc Graw-Hill, Dept of Economics

End of Business' Super-Boom in Sight

The present business boom is getting a little ragged around the edges if some key signs now showing up can be believed. And there is plenty of reason for believing the signs, two of these signs appear on the charts above. One is the recent increase in business inventories. Such an increase is often a sign that industry is producing more than it is able to sell. Sooner or later, it means a cutback in production.

Rising inventories don't always spell trouble. Last fall industry accumulated inventory mainly to replace stocks of materials and parts that ran down during the big steel strike. But these stocks have long since been replenished, and much of the inventory building in 1953 represents unsold finished goods (EBO, April 27).

The second sign is the trend in housing starts. Seasonally adjusted, they have been dropping for several months. So far, the drop does not amount to anything serious. But it may nevertheless be significant as an indicator of things to come because the basic source of demand for housing —family formation—is also dropping. (EBO, June 22).

Other little indicators are showing up in the economy—especially in the parts of industry that deal with durable goods. Steel producers, for instance, have had trouble filling their order books for the fourth quarter. This, along with lower prices for steel scrap, indicates that the steel industry won't be able to maintain its present super-high rate of production for much longer.

Some other signs taken at random: Rapid increases in consumer installment credit, which will be hard to maintain, and declining backlogs of orders for machine tools, which show the approaching end of the post-Korea boom.

Backing up these scattered signs of a letdown in the economy are some basic arguments. One is the prospective decline in federal government spending. The Administration's attempt to balance the budget means the economy will lose some of the inflationary push of federal deficits which it has had since the attack on Korea.

Business investment in new plant and equipment is also expected to decline in the near future, partly as the result of completion of most government-aided expansion programs in defense industries. Investment spending by farmers (which amounts to one-eighth of all private capital investment) has already started to decline.

These are just some of the basic shifts taking place in important areas of the economy. But they are particularly important because they have been the center of the big boom in all business for the past three years.

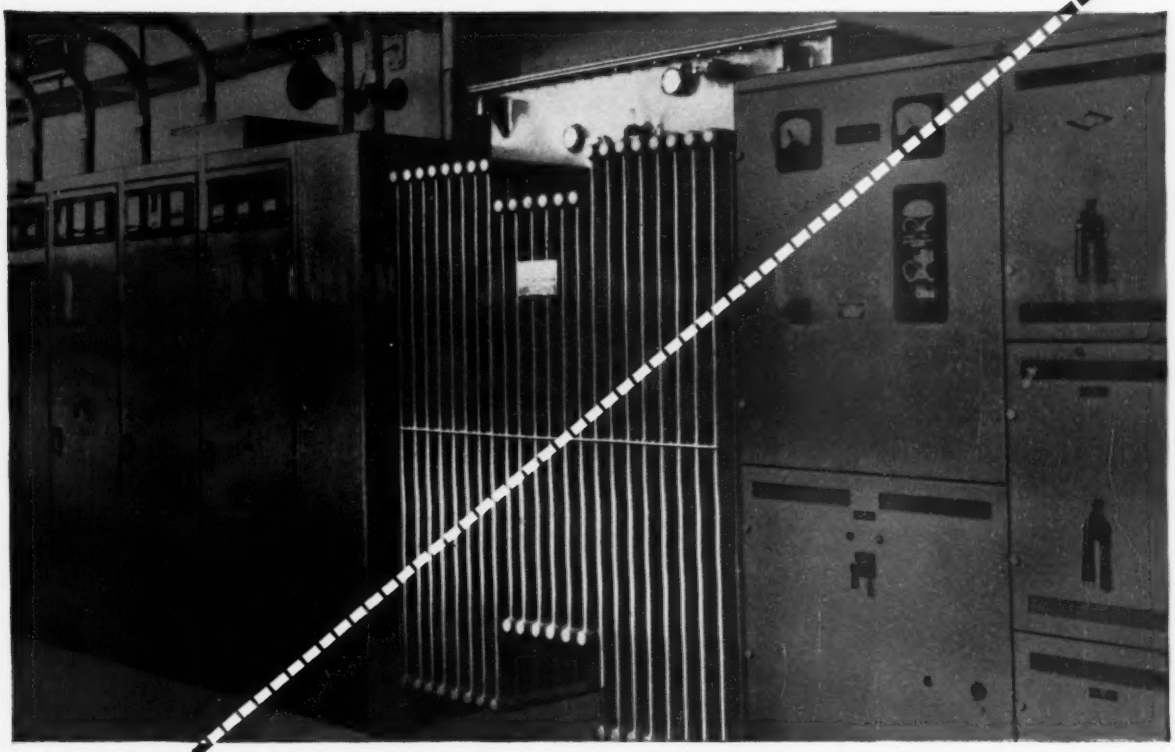
The effects of the developments have not yet showed up in the FRB industrial production index. It was lower in July and August than earlier this year but only because of seasonal factors. From now on the trend is likely to be down from the September level, about 236 on the index.

However, there are some good reasons for believing that the drop won't be severe. For one thing, the federal government is committed to do everything possible to prevent a severe recession. Tax cuts and spending for needed public works may offset much of any decline.

In addition, most parts of the economy seem to be basically healthy. Consumers still have large savings to draw on in case of need. Debts are large but not very large in relation to peoples' incomes and savings. Business itself has plans for heavy capital spending in the near future even if economic activity does decline somewhat.

So any decline is likely to be relatively slight, in the opinion of most economic observers. That might mean a loss of 20-30 points on the FRB industrial production index and a slower rate of business lasting for one or two years. But, so far, few people expect anything much more troublesome than this.

Where DEPENDABILITY really counts



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